

# **EXHIBIT 10**

**UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF ILLINOIS  
EASTERN DIVISION**

ANDREW CORZO, SIA HENRY, MICHAEL MAERLANDER, ALEXANDER LEO-GUERRA, BRANDON PIYEVSKY, BENJAMIN SHUMATE, BRITTANY TATIANA WEAVER, and CAMERON WILLIAMS, individually and on behalf of all others similarly situated,

*Plaintiffs,*

v.

BROWN UNIVERSITY, CALIFORNIA INSTITUTE OF TECHNOLOGY, UNIVERSITY OF CHICAGO, THE TRUSTEES OF COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK, CORNELL UNIVERSITY, TRUSTEES OF DARTMOUTH COLLEGE, DUKE UNIVERSITY, EMORY UNIVERSITY, GEORGETOWN UNIVERSITY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, NORTHWESTERN UNIVERSITY, UNIVERSITY OF NOTRE DAME DU LAC, THE TRUSTEES OF THE UNIVERSITY OF PENNSYLVANIA, WILLIAM MARSH RICE UNIVERSITY, VANDERBILT UNIVERSITY, and YALE UNIVERSITY,

*Defendants.*

Case No. 1:22-cv-00125

*Class Action*

**AMENDED EXPERT REPORT OF  
HAL J. SINGER, PH.D.**

May 28, 2024

This report cites and quotes material that Defendants designated as Confidential or AEO under the Second Amended Confidentiality Order (ECF No. 608)

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## INTRODUCTION AND ASSIGNMENT

1. Plaintiffs in this matter are former undergraduate students who attended, and received need-based institutional grant aid from, Defendants<sup>1</sup> during the Class Period (defined below). Defendants are elite, private national universities that, at various times between January 1, 1998, and approximately November 4, 2022, were members of the 568 Presidents' Group (the "568 Group").<sup>2</sup> Plaintiffs seek to represent a Class (defined below) of similarly situated current and former undergraduate students of the Defendants.

2. The "568" in the "568 Group" refers to Section 568 of the Improving America's Institutions Act of 1994. I understand that Section 568, until it expired on September 30, 2022, exempted certain agreements between two or more institutions of higher education from antitrust scrutiny if each participating institution admitted all of its students who were U.S. citizens or domestic U.S. residents "on a need-blind basis." Section 568 (the "568 exemption") defined "on a need-blind basis" to mean "without regard to the financial circumstances of the student involved or the student's family."<sup>3</sup> In particular, the 568 exemption stated that it "shall not be unlawful under the antitrust laws for 2 or more institutions of higher education at which all students admitted are admitted on a need-blind basis, to agree or attempt to agree" on the following:

- (1) to award such students financial aid only on the basis of demonstrated financial need for such aid;
- (2) to use common principles of analysis for determining the need of such students for financial aid if the agreement to use such principles does not restrict financial aid

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1. "Defendants" are Brown University, California Institute of Technology, University of Chicago, The Trustees of Columbia University in the City of New York, Cornell University, Trustees of Dartmouth College, Duke University, Emory University, Georgetown University, The Johns Hopkins University, Massachusetts Institute of Technology, Northwestern University, University of Notre Dame du Lac, The Trustees of the University of Pennsylvania, William Marsh Rice University, Vanderbilt University, and Yale University.

2. The College Board defines institutional aid as the "financial aid" that "is provided by the college or university you plan to attend." *How to Get State and Institutional Financial Aid*, BIGFUTURE, <https://bigfuture.collegeboard.org/pay-for-college/get-help-paying-for-college/state-and-institutional-financial-aid> (last visited Apr. 2024). I use "institutional aid" to mean "institutional financial aid."

3. 15 U.S.C. § 1, note.

officers at such Institutions in their exercising independent professional judgment with respect to individual applicants for such financial aid; or

- (3) to use a common aid application form for need-based financial aid for such students if the agreement to use such form does not restrict such Institutions in their requesting from such students, or in their using, data in addition to the data requested on such form.<sup>4</sup>

3. Plaintiffs allege that none of the Defendants qualified for the 568 exemption because, during each year of the Class Period (defined below), at least one Defendant did not admit all of its undergraduate students who were U.S. citizens or domestic U.S. residents on a need-blind basis.<sup>5</sup> Plaintiffs further allege that Defendants entered into a conspiracy (that is, formed a cartel) by joining or associating with the 568 Group with the goal of suppressing institutional grant aid and artificially inflating the difference between (a) the cost of attendance (the sum of tuition, fees, room and board paid by students to attend an institution) and (b) the institutional grant aid provided.<sup>6</sup> “Institutional grant aid” refers to any need-based financial grant or scholarship aid that an institution awards its students and that students need not repay. The “Effective Institutional Price” equals the cost of attendance remaining after subtracting any institutional grant aid. I refer to this alleged conspiracy and all of its constituent components (as discussed further below) hereafter in this report as the “Challenged Conduct” or “Overarching Agreement.”

4. I understand that, under Plaintiffs’ theory of the case, the Challenged Conduct occurred over the Class Period (defined below).<sup>7</sup> I understand further that the Challenged Conduct

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4. Section 568(a).

5. Second Amended and Supplemental Class Action Complaint (“Compl.”), ECF No. 308, ¶¶ 3-4.

6. Cost of attendance is not the same as tuition. Tuition is the cost to register as a student and attend classes at an institution. Cost of attendance includes additional relevant costs, such as room, board, and various fees. Institutions provide a cost-of-attendance estimation on their websites, but the cost of attendance estimates for previous years are not consistently publicly available. The most comprehensive source is the Department of Education’s Integrated Postsecondary Education Data System (“IPEDS”), which retains the cost of attendance for institutions as reported to the Department of Education. I use the IPEDS values for all years prior to 2023. *See* my workpapers for details.

7. Most Defendants joined the 568 Group in connection with its formation in January 1998, but as my analyses below show, the 568 Group did not all implement the Challenged Conduct until September 2003. Some Defendants, as my analyses below also show, joined in later years.

included an agreement among Defendants to apply a “consensus approach” to financial aid, which involved reaching agreement on (1) six core principles of awarding financial aid (which principles I review further below); (2) making need-based aid the primary form of financial aid; (3) using the Institutional Methodology (defined below), or “IM”, as the “base” method for need analysis and as the starting point for calculating financial aid; (4) developing and implementing the Consensus Methodology (defined below), or “CM”, as a variation of the IM for purposes of need analysis; (5) using a common manual for applying “professional judgment” to determinations of need, and treating professional judgment as the exception, rather than the rule; and (6) reciprocally sharing competitively sensitive information relating to principles, practices, amounts, and methods regarding the provision of financial aid.<sup>8</sup>

5. I use the term “financial aid” (or “aid”) in this report to refer to any form of assistance to support undergraduate studies received from any source.<sup>9</sup> Financial aid includes grants and scholarships from various sources (including institutional grants) as well as loans or work-study programs. Loans and work-study are forms of “self-help,” because loans are to be repaid and the student earns funds by working.<sup>10</sup> The cost of attendance reflects the gross price to attend an institution (before accounting for all forms of financial aid). The Effective Institutional Price, as

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8. Some 568 Group members and documents also refer to a “Consensus Approach,” which appears to be a general description of the CM in combination with the core principles and common approach to professional judgment.

9. The College Cost Initiative, of which Defendants are partners, states: “A financial aid offer is a document sent by a postsecondary institution to a student that outlines the amounts and details of the financial aid being offered to the student, which may include scholarships, grants, loans, employment, or other forms of financial assistance to pay for college expenses. Sometimes schools refer to these as financial aid ‘awards’, although this term is outdated. Schools should refer to these as financial aid offers.” *Glossary*, COLLEGE COST TRANSPARENCY INITIATIVE, <https://www.collegeprice.org/glossary> (last visited May 2024). The most common forms of financial aid are grants, loans, and work study. The most common sources of financial aid are federal, state, institutional, and outside sources.

10. The College Cost Initiative explains: “Federal Work-Study provides funding for part-time jobs for undergraduate and graduate students with financial need. Unlike grants and loans, FWS is paid to students as they earn the funds by working.” *Glossary*, COLLEGE COST TRANSPARENCY INITIATIVE, <https://www.collegeprice.org/glossary> (last visited May 2024).



noted, equals the cost of attendance minus the institutional grant aid. It follows that, holding cost of attendance constant, lowering institutional grant aid increases Effective Institutional Price.

6. I distinguish Effective Institutional Price from the term “net price” in higher education. I understand that this is the statutory definition of “net price”:

The term “net price” means the average yearly price actually charged to first-time, full-time undergraduate students receiving student aid at an institution of higher education after deducting such aid, which shall be determined by calculating the difference between—

(A) the institution’s cost of attendance for the year for which the determination is made; and

(B) the quotient of—

(i) the total amount of need-based grant aid and merit-based grant aid, from Federal, State, and institutional sources, provided to such students enrolled in the institution for such year; and

(ii) the total number of such students receiving such need-based grant aid or merit-based grant aid for such year.<sup>11</sup>

7. This definition refers to the net price that first-time, full-time (“FTFT”) undergraduate students pay. My econometric analyses in this report rely on student-level data per academic year. I use the term “academic year” to refer to a fall term through summer term. The 2010 academic year, for instance, means the fall 2010 term, spring 2011 term, and summer 2011 term. The Department of Education defines net price, for a single student in a given academic year, as “the amount that a student pays to attend an institution in a single academic year after subtracting scholarships and grants the student receives. Scholarships and grants are forms of financial aid that a student does not have to pay back.”<sup>12</sup> Accordingly, in this report, Effective Institutional Price is cost of attendance minus institutional need-based grants and scholarships. Subtracting third-party

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11. 20 U.S.C. § 1015a. This definition thus refers to “merit aid.” I refer to “merit aid” in this report as institutional aid other than need-based institutional aid.

12. *Net Price Calculator Center*, U.S. DEPARTMENT OF EDUCATION, [https://collegecost.ed.gov/net-price\\_](https://collegecost.ed.gov/net-price_) (last visited May 2024).

grants and scholarships from the Effective Institutional Price would yield the net price defined above. I concentrate in the body of this report on the effects of the Challenged Conduct on the Effective Institutional Price, because it is the effective price that Defendants charge, after deducting the institutional aid they provide (but without considering grant aid that federal and state governments, and other third-party sources, may provide).

8. I understand that the Class does not include those for whom the total cost of attendance, including tuition, fees, room, and board for each undergraduate academic year, was covered by any form of financial or merit aid (not including loans) from one or more Defendants. Plaintiffs define the “Class” as follows:

All persons who have during the Class Period (a) enrolled in one or more of Defendants’ full-time undergraduate programs, (b) received at least some need-based financial aid from one or more Defendants, and (c) whose tuition, fees, room, or board to attend one or more of Defendants’ full-time undergraduate programs was not fully covered by the combination of any types of grant or merit aid in any undergraduate year.<sup>13</sup>

Under this definition, because a single student could experience one year or a series of years as part of her undergraduate education in which a combination of institutional grant or merit aid covered that student’s cost of attendance, but other years in which that student’s institutional grant or merit aid did not cover the student’s full cost of attendance, that student would be in the Class but only, for impact or damages purposes, those years in which the institutional aid did not cover the full cost of attendance.

9. The Class Period is defined as follows:

(a) For Brown, Dartmouth, and Emory—from fall term 2004 through June 30, 2023.

(b) For Chicago—from fall term 2003 through June 30, 2014.

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13. Compl. ¶ 200.

- (c) For Columbia, Cornell, Duke, Georgetown, MIT, Northwestern, Notre Dame, and Rice—from fall term 2003 through June 30, 2023.
- (d) For Penn—from fall term 2003 through June 30, 2019.
- (e) For Vanderbilt—from fall term 2003 through June 30, 2020.
- (f) For Yale—from fall term 2003 through June 30, 2007, and from fall term 2018 through June 30, 2023.
- (g) For Caltech—from fall term 2020 through June 30, 2023.
- (h) For Johns Hopkins—from fall term 2022 through June 30, 2023.<sup>14</sup>

10. Excluded from the Class are:

- (a) Any Officers<sup>15</sup> and/or Trustees of Defendants, or any current or former employees holding any of the following positions: Assistant or Associate Vice Presidents or Vice Provosts, Executive Directors, or Directors of Defendants' Financial Aid and Admissions offices, or any Deans or Vice Deans, or any employees in Defendants' in-house legal offices; and
- (b) Any person who was not a U.S. citizen or permanent resident at the time such person attended a full-time undergraduate program and received at least some need-based financial aid from one or more Defendants; and
- (c) the Judge presiding over this action, his or her law clerks, spouse, and any person within the third degree of relationship living in the Judge's household and the spouse of such a person.

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14. *Id.* See Appendix 3 Table 1 for a timeline showing when each Defendant claims to have participated in the 568 Group. The Class definition, and thus my analysis, considers only those years in which a Defendant admits it was formally participating in the 568 Group and considers, for purposes of this report, that a Defendant was no longer in the 568 Group after it resigned. As I understand it, Plaintiffs do not accept claims of withdrawal as a legal matter. I do not opine on whether Defendants' claimed withdrawals, as a matter of antitrust conspiracy law, were effective. To the extent that I am assuming that Defendants were not participating in the Challenged Conduct (when some or all may have been), my analysis would tend to understate impact and damages to the Class both because I am using the periods after Defendants claim to have left as "clean" periods and also because I am not counting those periods as part of the damages.

15. The Columbia "Officers" excluded from the Class are members of the Senior Administration of Columbia and do not include exempt employees of Columbia referred to as officers.

11. Plaintiffs' counsel have asked me to determine whether there are methods and evidence, common to the Class as a whole, capable of establishing, and establishing (or computing with respect to damages), the following:

- (1) **Collective Market Power.** Whether Defendants had collective market power sufficient to inflate their Effective Institutional Prices above competitive levels for their respective students during the Class Period;
- (2) **Violation.** (a) Whether, when viewed through an economic lens, the Challenged Conduct as a whole, and each major component thereof, are consistent with the conspiracy alleged as part of the Challenged Conduct and inconsistent with unfettered competition and unilateral conduct, and (b) whether economic facts are consistent with each Defendant's participation in the Challenged Conduct and inconsistent with each Defendant acting unilaterally;
- (3) **Common Impact.** Whether the Challenged Conduct (a) inflated Effective Institutional Prices to Class Members above levels that would have prevailed absent the Challenged Conduct; and (b) caused widespread harm across the members of the Class in the form of artificially inflated Effective Institutional Prices. I have been asked, as part of my common impact analysis, to determine whether Defendants' conduct had anticompetitive effects and whether a reasonable person would have known of the anticompetitive effects of the Challenged Conduct during the Class Period, even if they had diligently considered the question; and
- (4) **Aggregate Damages.** Any aggregate damages to the Class resulting from the Challenged Conduct.

12. The opinions expressed in this report reflect my review of the evidence, data, testimony, and other relevant materials to date. I offer no opinion (and have not been asked to offer any opinion) as to whether any Defendant has violated the antitrust laws.

### SUMMARY OF CONCLUSIONS

13. I have reached the following opinions:

(1) **Collective Market Power.** Common evidence and methods reveal Defendants' collective market power in the relevant antitrust market for academic services that Elite Private Universities provide to undergraduate students ("Elite Private University" market). I define the Elite Private Universities as private universities ranked in the average top 25 U.S. News and World Report rankings over the period 2003-2022. In analyzing market power, I rely on both direct and indirect evidence.

a. **Direct evidence.** Defendants' ability to artificially inflate the Effective Institutional Price above levels that would have prevailed absent the Challenged Conduct constitutes direct evidence of market power and is supported by additional qualitative direct evidence of market power inferred from documentary evidence in this matter.

b. **Indirect evidence.** This evidence of market power includes practical indicia known as the *Brown Shoe* factors. My analysis involves three main components: (1) a peer analysis that shows that institutions in the relevant market perceive themselves as distinct from institutions outside of the relevant market; (2) an analysis showing that students attending universities in the relevant market tend to travel further distances than undergraduates attending universities not in the relevant market; and (3) pairwise comparisons of undergraduate admissions showing that undergraduates that are admitted to an institution in the relevant market consider and prefer other institutions in the relevant market more than institutions not in the relevant market in their enrollment decision. In addition, I use various metrics to show that Defendants enjoyed sufficiently large shares of the relevant market to support the structural presumption of market power. Further, I discuss the barriers to entry that characterize the market for elite private universities.

(2) **Violation.** As an economic matter, qualitative evidence in this matter is consistent with the Challenged Conduct reflecting collusive action and inconsistent with unilateral competitive conduct. I also provide quantitative evidence consistent with each Defendant's participation in the Challenged Conduct and inconsistent with each Defendant acting unilaterally. I offer no opinion regarding whether the Challenged Conduct violated antitrust law.

(3) **Common Impact.** I employ a standard, two-step approach to demonstrating common impact both of which steps are common to the Class as a whole. In the first step, I estimate a regression model that finds that the Challenged Conduct caused Effective Institutional Prices at Defendant institutions to increase above the levels that would have prevailed in its absence (that is, "but-for" the Challenged Conduct). In the second step, I employ two different means of

demonstrating widespread impact across the Class. First, I perform a standard in-sample prediction methodology to demonstrate that the general Effective Institutional Price increase established in the first step caused all or nearly all members of the Class to pay artificially inflated prices, and thus suffer impact. I also use a standard economic price structure analysis to demonstrate that Defendants' prices tended to move together and are linked such that a change to the Effective Institutional Price to one Class Member would be linked with a change in the Effective Institutional Price to another Class Member. I conclude through these analyses that each of the seventeen Defendants charged Effective Institutional Prices that were artificially inflated during the periods each was formally a member of the 568 Group as compared to a more competitive benchmark period. The inflated prices that I observe are consistent with each Defendant's participation in the Challenged Conduct and inconsistent with unilateral conduct. My common impact analysis provides empirical evidence of anticompetitive effects in the form of artificially inflated Effective Institutional Prices that Class Members at Defendant institutions paid due to the Challenged Conduct. In addition, record evidence, common to the Class as a whole, indicates that the Challenged Conduct generated anticompetitive effects, increasing Effective Institutional Prices relative to what they would have been absent the Challenged Conduct. In addition, a reasonable person during the Class Period would not have known that the Challenged Conduct had caused or was causing these anticompetitive effects, even if that person had diligently considered the question.

- (4) **Aggregate Damages.** Common methods and evidence can be used to quantify the aggregate damages to the Class resulting from the Challenged Conduct. Using standard econometric methods, I calculate that Class Members suffered \$860.8 million in damages by collectively paying Effective Institutional Prices to Defendants that were artificially inflated by the Challenged Conduct.

14. I set forth below my full analyses in support of the foregoing conclusions. I organize my Report as follows.

15. In the Background, I provide an overview of the educational services that Defendants offer to students and the financial aid that Defendants provide; the relevant history that illustrates how the Challenged Conduct departed from unfettered price competition between Defendants for students; and a brief discussion of how the relevant economic literature on financial aid in higher education supports my analyses and methods.

15. In Part I, I show that direct and indirect evidence demonstrates Defendants' collective market power. Direct evidence, which does not depend on any relevant market definition and any calculation of Defendants' collective market share, here refers to documentation of Defendants' collective ability (1) to increase their Effective Institutional Prices above competitive levels, or (2) to harm competition. Defendants' collective high share in a relevant antitrust market offers indirect evidence of market power. Under any of three different measures, Defendants accounted for approximately three quarters of the relevant market throughout the Class Period. High barriers to entry protect Defendants' collective share. High market shares reflect the structural presumption inherent in standard economic thought of a causal nexus between high market concentration and the likelihood of anticompetitive harm that results from the exercise of market power.

16. In Part II, I review record evidence relating to the Challenged Conduct and discuss the key components that characterized it. I show that quantitative analyses yield results that are consistent with all Defendants having engaged in the alleged Overarching Agreement and each Defendant's participation in the Challenged Conduct. Next, I spell out the criteria by which economists have studied qualitative evidence consistent with a cartel. I then show that record evidence satisfies this economic criteria.

17. In Part III, I use common methods and evidence to demonstrate that the Challenged Conduct resulted in common impact to the Class. I use a standard, two-step methodology. In step one, I estimate an econometric model whose results indicate that Defendants inflated the Effective Institutional Prices relative to those that would have prevailed absent the Challenged Conduct, in the but for world. In step two, I show that, as a result of the Challenged Conduct, all or nearly all Class Members paid inflated Effective Institutional Prices. I also explain why a reasonable person could

not have known of the anticompetitive effects, even had they considered the question. My common impact analyses require no individualized inquiries.

18. In Part IV, I demonstrate that I can use standard economic methods to reliably calculate aggregate damages in the form of artificially inflated Effective Institutional Prices that Defendants charged Class Members during the Class Period that resulted from the Challenged Conduct. Because I estimate the Effective Institutional Price as a dollar inflation per Class Member and academic year, I calculate damages by multiplying the estimate by the sum of Class Member-academic year pairs that occurred during the portion of the Class Period in which the Defendant participated in the 568 Group (that is, crediting Defendants' purported resignations). I calculate that Class Members suffered aggregate damages over the Class Period of \$860.8 million.



### QUALIFICATIONS

19. I am a Managing Director at Econ One Research and a Career-Line Professor at the University of Utah College of Social and Behavioral Science, where I teach Antitrust Economics to graduate economic students and Economics and the Law to undergraduate economic students. I am also the director of an inter-disciplinary institute at the University of Utah, named the Utah Project, that straddles the law school and the economics department and is dedicated to the study of antitrust and consumer protection law and policy. I received my undergraduate degree from Tulane University and my Ph.D. in Economics from Johns Hopkins University.

20. I am an applied microeconomist with an emphasis on industrial organization and regulation. In an academic capacity, I have published several books and book chapters, spanning a range of industries and topics, and my articles have appeared in dozens of legal and economic journals. My competition-related articles have appeared in multiple American Bar Association (ABA) Antitrust Section journals, and I have been a panelist at several ABA Antitrust events. In a consulting capacity, I have been nominated for antitrust practitioner of the year among economists in 2013 by the American Antitrust Institute (AAI) for my work in *Tennis Channel v. Comcast*, and AAI named me as co-Honoree in the same category in 2018 for my work in *In re Lidoderm Antitrust Litigation* and in 2023 for my work in *Cung Le et al. v. Zuffa d/b/a Ultimate Fighting Championship*.

21. I have testified as an economic expert in state and federal courts, as well as before regulatory agencies. I also have testified before the House Judiciary Subcommittee on Antitrust and the Senate Judiciary Subcommittee on Competition Policy, Antitrust, and Consumer Rights on the interplay between antitrust and sector-specific regulation. Federal courts have relied on my models

of common impact in certifying ten classes in antitrust matters,<sup>16</sup> and five classes in consumer protection matters.<sup>17</sup>

22. My full curriculum vitae appears as Appendix 1 to this report and reflects a list of the cases in which I have served as a testifying expert in the last four years and a list of publications I have authored in the last ten years. The materials on which I relied in forming my opinions in this matter are listed in Appendix 2.

23. I have no financial stake in the outcome of this case. Econ One is being compensated for my work in this matter at a rate of \$1,000 per hour regardless of whether Plaintiffs prevail.

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16. *Meijer, Inc. v. Abbott Labs.*, No. C 07-5985 CW, 2008 WL 4065839 (N.D. Cal. Aug. 27, 2008) (granting Plaintiffs' Motion for Class Certification); *Natchitoches Parish Hosp. Serv. Dist. v. Tyco Int'l, Ltd.*, 262 F.R.D. 58 (D. Mass. 2008) (granting Motion to Certify Class); *Se. Missouri Hosp. v. C.R. Bard, Inc.*, No. 1:07cv0031 TCM, 2008 WL 4372741 (E.D. Mo. Sept. 22, 2008) (granting in part Motion for Class Certification); *Johnson v. Arizona Hosp. & Healthcare Ass'n*, No. CV 07-1292-PHX-SRB, 2009 WL 5031334 (D. Ariz. July 14, 2009) (granting in part Motion for Class Certification); *In re Delta/AirTran Baggage Fee Antitrust Litig.*, 317 F.R.D. 675 (N.D. Ga. 2016) (granting Motion to Certify Class); *In re Lidoderm Antitrust Litig.*, No. 12-md-02521-WHO, 2017 WL 679367 (N.D. Cal. Feb. 21, 2017) (granting Motions for Class Certifications); *In re Pork Antitrust Litig.*, No. CV 18-1776 (JRT/JFD), 2023 WL 2696497 (D. Minn. Mar. 29, 2023) (granting Motion to Certify Class); *Le v. Zuffa, LLC*, No. 2:15-cv-01045-RFB-BNW, 2023 WL 5085064 (D. Nev. Aug. 9, 2023) (granting in part Motion to Certify Class); *Simon and Simon, PC d/b/a City Smiles and VIP Dental Spas v. Align Technology, Inc.*, No. 20-cv-03754-VC (N.D. Cal. Nov. 29, 2023) (Order Granting in Part and Denying in Part the Motions for Class Certification; Denying Motions to Exclude Dr. Singer and Dr. Vogt); *In re: Broiler Chicken Grower Antitrust Litig.* (No. II) 6:17-cv-00033-RJS-CMR (E.D. Ok. Apr. 18, 2024) (granting Motion to Certify Class and denying *Daubert* motion as to Dr. Singer).

17. *In re: MacBook Keyboard Litig.*, No. 5:18-cv-02813-EJD, 2021 WL 1250378 (N.D. Cal., Apr. 5, 2021) (granting Motion to Certify Class); *In re JUUL Labs, Inc., Mktg. Sales Pracs. & Prod. Liab. Litig.*, 609 F. Supp. 3d 942 (N.D. Cal. 2022) (granting Motion For Class Certification); *In re Univ. of S. California Tuition & Fees COVID-19 Refund Litig.*, No. CV 20-4066-DMG (PVCx), 2023 WL 6453814 (C.D. Cal. Sept. 29, 2023) (granting motion to certify a class); *In re Pepperdine Univ. Tuition & Fees Covid-19 Refund Litig.*, No. CV 20-4928-DMG (KSX), 2023 WL 6373845 (C.D. Cal. Sept. 26, 2023) (granting motion to certify a class); *Michael Miazza, et al v. Board of Supervisors of LSU and Agricultural and Mechanical Coll.*, Case No. C-696918 (Parish of East Baton Rouge May 19, 2023) (Granting Motion to Certify Class).

## **BACKGROUND**

24. This section summarizes certain relevant entities and details to put my opinions and analyses in context. I do not intend this section to represent a detailed analysis of the factual record; instead, it is meant to outline the key relevant information that frames the analysis and opinions I offer in this report.

### **A. Price Discounting in Higher Education**

25. U.S. universities and colleges (“higher educational institutions” or “institutions”) price their educational services in an unusual manner. Unlike the providers of the vast majority of goods and services in the U.S. economy, which charge the same price to all consumers, many higher educational institutions charge different effective net prices to different students. All of the net prices are tethered to, and operate effectively as discounts off of, these institutions’ “list” or “sticker” prices. Those prices include charges for tuition, fees, room and board, and an allowance for incidental expenses.

26. In economics, this practice of charging different prices to different consumers is “price discrimination.” Higher educational institutions price discriminate (a) on the basis of a student’s ability to pay, or need, by discounting list prices through “need-based” aid and/or (b) on the basis of some aspect of a student’s merit, by discounting list prices through “merit aid.”

27. Price discrimination based on consumer need, or the consumer’s ability to pay, is especially unusual in the U.S. economy. Where providers of goods or services price discriminate, they typically do so on the basis of a consumer’s willingness to pay. Ability to pay and willingness to pay are very different concepts.

28. There are two components of a higher-education institution’s computation of institutional aid, or the discount off the list price. First, institutions calculate what they believe families can pay, or the “expected family contribution” (“EFC”). Second, from the list price,

institutions subtract the EFC to determine a student's "need" and then determine how to "meet" that need, through a "package" of institutional aid. This package includes grants from the federal and state governments and private sources, loans, and self-help (which includes "work study" for which student must work to receive compensation and/or summer earnings).<sup>18</sup> The package is often referred to as "financial aid," which from an economic perspective is a misnomer. That is because loans must be repaid, and students must work in order to receive funds to pay for school.

29. Only grant aid is a price discount, which determines the "net price" that students actually pay (that is, the list price minus grant aid from all sources). Of all grant aid, only institutional grant aid is provided by the institution. In contrast, federal and state government aid, and aid from other sources, "travels" with the student, reducing the price of any institution the student decides to attend. Accordingly, because this case concerns the prices that Defendants have charged Class Members, in this report I use Effective Institutional Price as the key variable to be modeled, which is the difference between the list price and institutional grant aid.

30. Many higher educational institutions price discriminate by providing merit aid, in lieu of need-based aid or as a supplement to it. Institutions can define "merit" however they see fit. Institutions thus provide merit aid for academic performance or for achievement in a sport, music, drama, debate, or another activity a school deems worthy of a discount to encourage the student to enroll at that institution. Compared to elite private institutions such as Defendants, most of which provide only need-based aid, public colleges and universities more frequently offer merit aid. Several Defendants provide merit aid, but in relatively small amounts, as shown in Appendix 3. Where the data permit, or where it is clear that Defendants do not provide merit aid as a policy (such

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18. Students may borrow through federally subsidized loans (Federal Stafford Loans) as part of their packages, while parents may borrow through Federal Parent Plus Loans to help pay for the family contributions, if they choose. I discuss further below both of these types of loans.

as at Caltech and MIT) or by separate agreement (in the case of the Ivy League Defendants) I exclude merit aid from computations of Effective Institutional Prices in my analyses below that use Defendants' structured financial data.

## **B. The Federal and College Board Methodologies**

31. In addition to the "Consensus Methodology," which I discuss in the next section, two other EFC formulae have been especially relevant in higher education over the past three decades—(1) the "Federal Methodology" ("FM") and (2) the "Institutional Methodology" ("IM"). The "College Board," which developed the IM, is a not-for-profit organization that oversees a membership association of educational institutions and, among other activities, provides resources, tools, and services to colleges and universities in connection with the provision of financial aid.

34. A former economist working for the College Board, Dr. Sandy Baum, elaborated on the distinctions between the FM and IM and the economic principles that underlay them in the second edition of an extensive document published by the College Board, titled "A Primer on Economics for Financial Aid Professionals," from 2004 (the "Primer").<sup>19</sup> I draw on this document in several places in this section.

32. The FM and IM share a common general framework—namely, by first assessing the "available income" and "available assets" of both the student and family, and then applying "assessment rates," expressed in percentages, to that income and assets. The sum of both multiplied amounts (applicable to available income and assets, respectively) represents what the student and family can "afford" to pay for an institution's educational services.

33. The Department of Education introduced the FM in 1992 to determine student and parent eligibility for federal financial aid: Pell grants for students from low-income families, Federal

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19. See JHULIT\_0000026861.

Student Economic Opportunity Grants (FSEOG) for especially low-income families, federally subsidized loans (Stafford Loans for students and Parent Plus for parents), and federally supported work study. The FM is an updated version of the Congressional Methodology for determining federal financial aid, which was in place before 1992.<sup>20</sup>

34. In seeking federal financial aid, students complete the Federal Application for Federal Student Aid (FAFSA). Using students' inputted data, the Department of Education evaluates the student's demonstrated need and calculates the student's FM EFC. The Department of Education provides the FAFSA information to higher educational institutions on an individual's Student Aid Report (SAR). The FM EFC is the amount the student (and her family, where applicable) can expect to contribute toward the cost of higher education.

35. The FM did not account for various resources that other families could use to pay for higher education. The FM did not include as part of available income, for example, the earnings of non-custodial parents (for divorced families) and different sources of untaxed income, or as available assets a family's home equity or a value of family farms.<sup>21</sup>

36. Dr. Baum testified regarding the FM: "It was my view that it was more a rationing formula than a real measure of ability to pay,"<sup>22</sup> because it has "incomplete measures of income and of assets."<sup>23</sup> Dr. Baum has further and similarly explained that the FM was "a complex but imprecise system for allocating funds, rather than a reliable index of financial capacity."<sup>24</sup>

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20. *Id.* at -863.

21. *See, e.g.*, COFHE-02-00002732 Appendix A; Nucciarone 30:15-31:3.

22. Baum 63:22-64:4.

23. *Id.* 64:14-21.

24. Sandy Baum, A PRIMER ON ECONOMICS FOR FINANCIAL AID PROFESSIONALS, COLLEGE BOARD AND THE NATIONAL ASSOCIATION OF STUDENT FINANCIAL AID ADMINISTRATORS 4 (1996) [hereafter, Primer].

37. Considering the nature of FM, “colleges and universities that have significant institutional funds to distribute [sought] more reliable measures to rank families and students by financial strength.”<sup>25</sup> The College Board took the lead in the 1990s in developing a “Base IM” as a refinement of the Uniform Methodology that had been developed by former Harvard Dean John Munro in the 1950s.<sup>26</sup>

38. The Base IM differed from the FM in several significant ways. For example, unlike the FM, the Base IM included home equity in the definition of available assets. The premise of counting at least some amount of home equity as assets is that such equity signified that the family could afford to borrow using such equity as collateral. Unlike the FM, moreover, the Base IM counted both income and assets of non-custodial parents. The premise of counting the income and assets of the non-custodial parent was that it was the parents who had gotten the divorce, not the parents and child. That is, the parent still had the legal responsibility for the welfare of the student, such that his or her financial resources should thus be available to help pay for the student’s education.<sup>27</sup> The IM is updated annually.<sup>28</sup>

39. Although the College Board’s aimed through the Base IM to measure ability to pay more accurately, the assessment rates for the Base IM were also very similar to the assessment rates that the FM used. Whereas the FM assessment rates on available income ranged from 22 percent to 47 percent, the Base IM rates ranged from 22 percent to 46 percent. The tables of available income

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25. *Id.*

26. Baum 21:18-23:6.

27. *Id.* 188:14-195:1.

28. *See, e.g.,* McCall 64:8-19.

(or “income bands”) for which these graduated percentages would apply were also very similar in the FM and Base IM.<sup>29</sup> The same was true of the assessment rates on available assets.<sup>30</sup>

40. The College Board formed the Base IM on the principle of ability to pay, but the Base IM does not appear to be the product of an agreement by any of the College Board’s members, and the College Board did not require its member schools to use the Base IM, or any variation of it.<sup>31</sup> At no point did the College Board staff who developed the base IM discuss “using the IM to measure willingness to pay instead of ability to pay.”<sup>32</sup>

41. With respect to the system of awarding institutional aid, Dr. Baum regards the Base IM’s focus on student and family ability to pay as among the “fundamental concepts underlying the system.”<sup>33</sup> The College Board did not root the Base IM, any more than the UM, on any inherently “correct” economic assumptions. In making ability to pay the foundation for the Base IM, for example, the College Board relied on the notion of a student-school partnership where “if students are aware of the fact that they are paying for it and giving up something else, then they may be more motivated to put the required energy and effort into it.”<sup>34</sup> Yet Dr. Baum acknowledges that she reached this conclusion based only on “logic” and that it would be “hard to say” if it is based on “any particular economic precepts.”<sup>35</sup> She has not done any “empirical work” in this regard.<sup>36</sup>

42. The absence of any empirical data or economic principles underlying the Base IM is most evident with respect to the marginal “assessment rates” and corresponding income levels (or “income bands”) used to identify the percentage of the student’s and family’s available income and

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29. *See, e.g.*, Primer at 63, 89-90.

30. *See, e.g., id.* at 75-76.

31. *See, e.g.*, Meade Rule 30(b)(6) Dep. 297:17-24.

32. *Id.* 70:6-10.

33. Primer at 1.

34. Baum 105:6-16:8.

35. *Id.* 106:9-15.

36. *Id.* 107:8-108:21.



assets that the student and family could “afford” to use to pay for college. In employing the Base IM’s parent income assessment rates ranging from 22 percent to 46 percent over a range of income levels, for example, the College Board simply followed the UM. With respect to the economists who decided on those rates, Dr. Baum is “not sure how they came up with the exact numbers.”<sup>37</sup> She and others considered whether to change these assessment rates, conceding: “There was clearly no right answer to it, but just trying to look at what would be fair and how you could think about the circumstances of families at different income levels.”<sup>38</sup> “I don’t know of any arguments for specifically those rates as opposed to some in the same range.”<sup>39</sup>

43. The progressive assessment rates that the federal government used for the FM, and that the College Board used for the IM, are consistent with the progressive rate structure built into the federal income tax code, but there is no economic principle dictating that this type of rate structure is the “right” approach or what specific assessment rates and income bands are the “right” ones, just as there is not “right” structure for the marginal rates in the federal income tax code—which have frequently changed since the code was introduced in 1913. Writing in 2004, Dr. Baum notes this regarding the Base IM: “There is no way to determine, however, whether the existing rate structure is more vertically equitable than any alternative rate structure would be. This is a judgment on which reasonable people will always differ.”<sup>40</sup>

44. Dr. Baum further acknowledges with respect to the IM’s system for assessing ability to pay: “While the marginal rate schedule incorporated in the need analysis system is a critical determinant of expected contribution levels, it is perhaps the most difficult component of the system

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37. *Id.* 170:17-171:8, 317:19-318:6; Ex. 11 at 16.

38. *Id.* 172:3-13.

39. *Id.* 319:18-20.

40. Primer at 8.

for which to construct a logical argument based on economic principles . . . While it is intuitively pleasing to believe that wealthier people can give up a larger percentage of their incomes without undue suffering, there is really no way to quantify the sacrifices made by different people or to equalize burdens. Economists have not found a resolution to this quandary.”<sup>41</sup>

45. A further important premise underlying the IM was that institutions purportedly had only a limited pot of money to “spend” on Institutional Financial Aid.<sup>42</sup> In examining the “fundamental concepts underlying the system” of institutional grant aid in the early 2000s, for example, Dr. Baum described “the allocation of student aid dollars” on the premise that “institutions search for creative ways to make their limited aid dollars go further,” citing the “most productive possible use of limited resources,” and the use of “limited resources to influence institutional choice among students who attend college.”<sup>43</sup> Dr. Baum thus concedes that the extent to which a school could both award relatively more in total institutional grant aid, and still enroll the students needing aid, does “depend in part on the extent of the school’s resources,”<sup>44</sup> and “on institutional circumstances.”<sup>45</sup>

### **C. The “Overlap” Collusion Litigation and the 568 Exemption**

46. Well before the origin and implementation of the FM and Base IM, one small group of elite universities—the Ivy League and MIT—coordinated in their determinations of expected family contributions, one component of the institutional aid determinations. These institutions did so, from the late 1950s until 1991, under the rubric of the “Overlap Group.” These institutions

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41. *Id.* at 90.

42. The phraseology that schools would thus use in describing institutional financial aid as an expenditure, as noted, is somewhat misleading. A school does not “spend” on financial aid as an out-of-pocket expense—instead, such aid is simply a discount off of list price.

43. Primer at 1, 2, 5.

44. Baum 95:5-96:18.

45. *Id.* 97:11-22.

agreed: (a) to provide only need-based aid; (b) to use their own formula for calculating EFCs; and (c) except where the differences were \$500 or less, to set actual family contributions for students admitted to more than one of Overlap Group member institutions.

47. In 1991, the U.S. Department of Justice brought an antitrust suit under Section 1 of the Sherman Act against the Overlap Group universities. The eight Ivy League universities agreed to a consent decree that prohibited them from engaging in the three agreements, and other related practices. MIT went to trial in federal district court and lost. The Third Circuit Court of Appeals reversed and remanded for the district to consider more thoroughly MIT's asserted procompetitive justification for the Overlap agreements.<sup>46</sup> Consistent with a rationale for the Base IM, as noted above, the court premised its holding on the "unfortunate fact" that resources for financial aid were "limited."<sup>47</sup> This was in 1992, well before the enormous growth in the endowments of the Ivy League institutions, MIT, and other Defendants in this litigation. (I discuss this issue further below.)

48. The Department of Justice did not seek to retry the case and instead reached a settlement with MIT in December 1993. That settlement allowed MIT to agree upon common principles of determining need (EFCs), but only with other institutions that admitted all their students on a need-blind basis and that met their full need. The agreement also allowed MIT and such other schools to share certain aggregate data about financial aid awards that was compiled by a third party.<sup>48</sup>

49. In 1994, Congress extended the basic terms of the DOJ-MIT settlement to all schools that met the need-blind condition, by creating the 568 exemption. The language of the 568 exemption

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46. *Unites States v. Brown Univ.*, 5 F.2d 658, 662 (3d Cir. 1992).

47. *Id.* at 677.

48. MIT was not permitted to agree with other qualifying institutions on amounts of aid awards to specific students or discuss prospective tuition or faculty salaries. *Settlement allows cooperation on awarding financial aid*, MIT NEWS (Jan. 5, 1994), <https://news.mit.edu/1994/settlement-0105>.

tracked much (but not all) of the language of the settlement. Subsection (a) of Section 568 provided in pertinent part:

It shall not be unlawful under the antitrust laws for 2 or more institutions of higher education at which all students admitted are admitted on a need-blind basis, to agree or attempt to agree—

(1) to award such students financial aid only on the basis of demonstrated financial need for such aid.

(2) to use common principles of analysis for determining the need of such students for financial aid if the agreement to use such principles does not restrict financial aid officers at such institutions in their exercising independent professional judgment with respect to individual applicants for such financial aid.<sup>49</sup>

#### **D. The 568 Presidents' Group**

50. Competition in awarding institutional aid among the Ivy League universities appears to have been affected in a systematic way, post-Overlap, in approximately January 1998. That is when Princeton announced a policy of ensuring that no family with an income less than \$40,000 would be required to take out a loan. Princeton also eliminated the consideration of home equity as part of the resources available to pay for a Princeton education if a family's income fell below \$90,000.<sup>50</sup> These policies had the effect of increasing the amount of institutional aid Princeton awarded to families below the two "income thresholds."

51. After a few years of initial discussion, the 568 Presidents' Group formed in 1998. That was the same year that Princeton had announced its more generous policies on institutional aid. Most of the Defendants were original members of the 568 Group. Brown, Dartmouth, and Emory joined in 2004. Caltech joined in 2019. Johns Hopkins joined in 2021. Several elite liberal arts

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49. 15 U.S.C. § 1, note.

50. J.I. Merritt, *Teaching, Learning and Financial Aid*, PRINCETON (Oct. 10, 2001), [https://www.princeton.edu/~paw/archive\\_new/PAW01-02/02-0929/features1.html](https://www.princeton.edu/~paw/archive_new/PAW01-02/02-0929/features1.html).

colleges have also been members of the 568 Group, but as I discuss further below, these colleges were not and are not part of the relevant market in which Defendants compete.

52. The 568 Group took little action for the first few years after its formation. In 2001, however, Princeton (never a member of the 568 Group) went beyond its no-loan 1998 policy and in 2001 eliminated loans for all its students receiving institutional aid.<sup>51</sup> Harvard (also never a member of the 568 Group) followed a few weeks later by granting a \$2,000 rebate to all its students receiving institutional aid.<sup>52</sup> The 568 Group members understood that Harvard and Princeton never joined the 568 Group because “they wanted to be more generous in the analysis of the family’s ability to pay.”<sup>53</sup> Yale’s President Richard Levin, also an industrial organization economist, reacted with concern to Harvard’s rapid response to Princeton’s new policy, stating: “I’m surprised because it’s so soon,” and adding: “If we tried to match [other colleges’ aid programs] we’d be collecting zero tuition.”<sup>54</sup>

53. In October 2001, the members of the 568 Group, including Georgetown, agreed to the principles of what came to be known as the Consensus Approach and the Consensus Methodology (“CM”) for implementing it to conduct need analysis.<sup>55</sup> Record evidence suggests that the timing of the 568 Group’s agreement was not coincidental, but rather, triggered by Princeton’s more generous institutional aid policy.

54. In January 2001, Morton Schapiro, also a professional economist who was then President of Williams College and later became Chairman and then Vice Chairman of the 568 Group (as well as President of Northwestern), said that “Princeton’s move certainly isn’t helping. It doesn’t

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51. Yassmin Sadeghi, *Yale Pressured by Rival’s Aid Changes*, YALE NEWS (Mar. 1, 2005), <https://yaledailynews.com/blog/2005/03/01/yale-pressured-by-rivals-aid-changes>. The article implies that around the same time, but certainly before 2005, Princeton also eliminated home equity in the calculation of the family contribution.

52. DeGoia Ex. 2.

53. DeGoia 138:22-139:19.

54. DeGoia Ex. 2.

55. DeGoia Ex. 10 at -12.

make it easier to come to some sort of broad agreement in principle.”<sup>56</sup> Similarly, as one contemporaneous account reported:

Yale officials pointed out that Princeton, for example, is already striking an individual aid path. Princeton’s January aid announcement, which eliminated loans and reduced student savings, diverged from some of the 568 plans, administrators said. Administrators said they fear that more and more schools will make radical decisions if a group like the 568 presidents group is not allowed to exist.<sup>57</sup>

55. The 568 Group publicly announced itself in a July 2001 press release. As noted above, the 568 Group had formed a “Consensus Approach” for awarding institutional aid. This approach, which I address in further detail below, allegedly consisted of the combination of the agreement on six principles of financial aid, agreement on a Consensus Methodology (“CM”), and an agreement on guidelines for applying “professional judgment” in limited ways to the EFC calculations. The 568 Group members also allegedly agreed to exchange competitively sensitive information designed to limit competition and to facilitate enforcement of the Consensus Approach. In combination, the alleged agreement on the Consensus Approach and alleged agreement to share information constitute the Challenged Conduct that I examine in this report. Although the 568 Group members thus allegedly limited their competition on institutional aid, as explained further below, they would continue to compete aggressively over the size of their endowments.<sup>58</sup>

56. Defendants’ large endowments not only are a measure of their prestige, but also provide the resources for funding the infrastructure, faculty, and staff necessary to maintain that prestige. In his book *Economics in America*, Nobel laureate Angus Deaton explains that elite

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56. *Id.* Ex. 3.

57. Louise Story, *Deadlines looming in aid law*, YALE DAILY NEWS (Apr. 2, 2001), <https://yaledailynews.com/blog/2001/04/02/deadlines-looming-in-aid-law/>.

58. Defendants generally spent approximately 5% of a multi-year moving average of the market value of their endowments, although the spending formula varied across Defendants. *See, e.g.*, Dartmouth\_0000352934-35. As reflected in their annual reports many Defendants changed their endowment spending formulae at least once during the Class Period.

universities focus on continuously maintaining or increasing their endowments.<sup>59</sup> One study describes elite institutions as behaving in ways consistent with the “endowment hoarding hypothesis” by acting to maximize the size of their endowments. As an economic matter, this is equivalent to maximizing long-run net revenue.<sup>60</sup> When endowment returns fall, such as what occurred in the Great Recession, elite institutions will often slash expenses, including financial aid, as a means to maintain their significant endowments.<sup>61</sup>

57. It was in this context of maximizing resources for spending, and maximizing prestige, through endowment growth and size that Defendants allegedly agreed not to award institutional aid by what *the institutions* could afford, but instead based on what *students and families* could afford. And Defendants allegedly maintained their agreement on that principle through the substantial increase in the purchasing power of almost all of their endowments during the Class Period. Defendants’ focus on what students and families could afford to pay, reflected in several of the Core Principles I discuss further below, constitutes what I call the “affordability principle.”<sup>62</sup>

58. Defendants’ alleged agreement on the affordability principle, as I discuss further below, underlies the Defendants’ EFC and financial aid packaging decisions. These decisions in combination determined the size of Defendants’ awards of institutional grant aid and thus the Effective Institutional Prices they charged students receiving such aid. One accounting of the 568

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59. ANGUS DEATON, *ECONOMICS IN AMERICA: AN IMMIGRANT ECONOMIST EXPLORES THE LAND OF INEQUALITY* 154 (Princeton University Press 2023) [hereafter *ECONOMICS IN AMERICA*].

60. Jeffrey R. Brown, Stephen G. Dimmock, Jun-Koo Kang, & Scott J. Weisbenner, *How University Endowments Respond to Financial Market Shocks: Evidence and Implications*, 104(3) *AMERICAN ECONOMIC REVIEW* 931–962 (2014).

61. *ECONOMICS IN AMERICA* at 154 (citing the Brown et al. study, Deaton writes “the typical behavior was to *cut* the spending rate to try to rebuild the endowment, turning it into a millstone, not a life preserver. Universities cut the sizes of their incoming classes, reduced financial aid, and cut everything *except* the number of administrators”).

62. Principle 1 states: “To the extent *they are able, parents and students have the primary responsibility* to contribute to educational expenses before an institution awards financial aid.” Principle 2 states: “Families should contribute to educational expenses according to their *ability*. Those with similar financial profiles should contribute similar amounts.” (emphases added). In combination, these principles constitute the “affordability principle.”

Group’s decisions made clear that not competing for students on the basis of price, per the alleged agreement, was the Group’s objective: “the overarching goal of the group—to ensure that students are choosing schools based on fit, not on how much financial aid they are getting.”<sup>63</sup>

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63. Story (2001).



## I. COLLECTIVE MARKET POWER

59. In this section, I demonstrate that Defendants collectively had market power over their Effective Institutional Prices. My proof begins with direct evidence of Defendants' collective market power. I then show via indirect evidence that (1) Elite Private University services constitute the relevant antitrust product market and the United States represents the relevant geographic market;<sup>64</sup> (2) Defendants collectively account for a sizable share of the market for Elite Private University services in the United States; and (3) barriers to entry protect Defendants' shares.

60. Defendants' collective high share in a relevant (antitrust) output market—here, provision of educational and related services by Elite Private Universities—is indirect evidence of substantial collective market power. I define Elite Private Universities as the private universities ranked in the average top 25 of the U.S. News and World Report (“USN&WR”) university rankings from 2003-2022. Defendants in this matter account for well over half of the Elite Private Universities market by count, undergraduate enrollment, and tuition; and Defendants' collective shares are protected by high barriers to entry. As I explain in the Background section of this report, the literature on higher education differentiates Elite Private Universities from other institutions of post-secondary education. I explain my share calculations subsequently in this report.

61. High market shares reflect the structural presumption of a causal nexus between high

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64. The court in *Le et al. v. Zuffa* certified a class of MMA fighters, crediting a relevant market of Elite Fighter Services. *Cung Le, et al. v. Zuffa, LLC d/b/a Ultimate Fighting Championship*, 2:15-cv-01045-RFB-BNW (D. Nev. Aug. 9, 2023), ECF No. 839 (granting motion to certify class). With few exceptions, such as Oxford or Cambridge, U.S. students applying to Elite Private Universities do not perceive foreign universities to be a reasonable substitute. Students can obtain experience living abroad by a junior semester abroad, and the quality of Elite Private Universities in the United States is perceived to be higher than the quality of the best universities outside the United States. Kevin Carey, *Americans Think We Have the World's Best Colleges. We Don't*, NEW YORK TIMES (Jun. 28, 2014), <https://www.nytimes.com/2014/06/29/upshot/americans-think-we-have-the-worlds-best-colleges-we-dont.html> (“Americans have a split vision of education. Conventional wisdom has long held that our K-12 schools are mediocre or worse, while our colleges and universities are world class. . . . Many families are worried about how to get into and pay for increasingly expensive colleges. But the stellar quality of those institutions is assumed.”).

market concentration and the likelihood of anticompetitive harm that reflects the exercise of substantial market power. To wit, the relevant market definition and the attendant Defendant market shares serve only as a medium through which economists can investigate the existence of market power, particularly in instances where little or no direct evidence exists. In this case, however, direct evidence of Defendants' exercise of market power over Class Members, as revealed through my impact regressions, renders such indirect proof redundant. For completeness, I present both methods of proof, beginning with direct evidence.

#### **A. Direct Evidence of Market Power**

62. Economists can demonstrate market power directly via evidence that Defendants raised prices over competitive levels or excluded rivals.<sup>65</sup> Antitrust scholars have recognized that direct evidence of market power is superior to indirect evidence in many settings because it relies on observations about the actual market effects of challenged conduct rather than an inference about the potential effects of that conduct in a defined market.<sup>66</sup>

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65. Aaron S. Edlin & Daniel L. Rubinfeld, *Exclusive or Efficient Pricing? The Big Deal Bundling of Academic Journals*, 72 ANTITRUST L.J. 119, 126 (2004) (“[I]f power can be shown directly, there is no need for market definition: the value of market definition is in cases where power cannot be shown directly and must be inferred from sufficiently high market share in a relevant market.”); *see also, e.g.*, U.S. Department of Justice and the Federal Trade Commission, *Merger Guidelines* (Dec. 18, 2023) [hereafter *Merger Guidelines*] at 41 (“Direct evidence of the exercise of market power can demonstrate the existence of a relevant market in which that power exists.”).

66. *See, e.g.*, Carl Shapiro, *Antitrust: What Went Wrong and How to Fix It*, 35(3) ANTITRUST 33-45, 40 (2021) (“IO economists know that the actual economic effects of a practice do not turn on where one draws market boundaries. I have been involved in many antitrust cases where a great deal of time was spent debating arcane details of market definition, distracting from the real economic issues in the case. I shudder to think about how much brain damage among antitrust lawyers and economists has been caused by arguing over market definition.”). Dr. Shapiro has twice held the position of Deputy Assistant Attorney General for Economics at the Antitrust Division of the U.S. Department of Justice. *See also* Herbert Hovenkamp, *Digital Cluster Markets*, COL. BUS. L. REV. (2021) (“[D]igital markets are particularly susceptible to direct measurements of market power that do not depend on a market definition.”); Louis Kaplow, *Why (Ever) Define Markets?*, 124 HARV. L. REV. 437 (2010); Jonathan Baker & Timothy Bresnahan, *Economic Evidence in Antitrust: Defining Markets and Measuring Market Power* in PAOLO BUCCIROSSI, ED., HANDBOOK OF ANTITRUST ECONOMICS 1-42 at 15 (2008); *see also* Aaron S. Edlin & Daniel L. Rubinfeld, *Exclusive or Efficient Pricing? The Big Deal Bundling of Academic Journals*, 72 ANTITRUST L.J. 119-158, 141 (2004) (“Market definition is only a traditional means to the end of determining whether power over price exists. Power over price is what matters...if power can be shown directly, there is no need for market definition: the value of market definition is in cases where power cannot be shown directly and must be inferred from sufficiently high market share in a relevant market.”); *see also* PHILLIP

63. My impact regressions in Part III.A demonstrate that, due to the Challenged Conduct, Defendants were able to artificially inflate the Effective Institutional Price during the Class Period to an economically and statistically significant degree. It would not have been possible for Defendants to artificially inflate these prices unless they collectively held market power over Class Members in the first place. Therefore, I conclude that Defendants collectively held and exercised substantial market power during the Class Period.

**B. Indirect Evidence of Market Power**

64. As an alternative approach to demonstrating market power, I define a relevant market of undergraduate educational services that elite, private universities in the United States offer (“Elite Private University” market). I then show that Defendants collectively account for a significant share of that market. My primary proof of the existence of the market draws on the *Brown Shoe* factors, which are practical indicia of the contours of competition. Having established the contours of the relevant market, I next provide an analysis of market shares and barriers to entry. My relevant market analysis is further informed by a hypothetical monopolist test (“HMT”), which evaluates a relevant market as the smallest grouping of firms that would need to be combined through merger or collusion to sustain price increases substantially above the competitive level for a significant amount of time. For this analysis, I rely upon the results of impact regressions, which demonstrated that by allegedly colluding through the Challenged Conduct, Defendants collectively were able to profitably raise prices to Class Members above competitive levels for decades, an outcome that would have been impossible absent the collective exercise of market power. This analysis thus implies that the

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AREEDA, EINER ELHAUGE & HERBERT HOVENKAMP, 10 ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION 267, 325–28, ¶1758b (1996 & Supp. 2003); *see also* PHILLIP AREEDA, LOUIS KAPLOW & AARON EDLIN, ANTITRUST ANALYSIS: PROBLEMS, TEXT AND CASES ¶344 (6th ed. 2004); *see also* *Merger Guidelines* §4 (“Evidence of competitive effects can inform market definition.”).

relevant market is at least no larger than the one I have defined.

**1. Elite Private University Services Constitute the Relevant Market**

65. Defendants are elite, private, national universities that consistently rank among the top 25 national universities for undergraduate admissions in national surveys such as U.S. News & World Report. Defendant institutions attract prospective undergraduate students by offering amenities that smaller institutions cannot readily match, including vast and powerful alumni networks, prestigious professors, and ample opportunities for undergraduates to participate in research and other programs available in some combination at university-affiliated hospitals, laboratories, professional schools, and/or large academic libraries.

66. Both my market definition and my empirical analysis have support in the economics literature. For example, Winston (1999) finds that competition among institutions appears to be limited to “segments of similarly wealthy schools,” and that an institution “competes only with the ten above them and the ten below.”<sup>67</sup> Indeed, the top “wealthy private institutions” compete to “buy scarce student quality” and faculty quality, while less selective or non-selective institutions compete for students who will purchase their output.<sup>68</sup> Winston describes the incentives facing top universities as similar to an “arms race,” with each institution spending greater amounts towards more “competitive amenities” in response to other institutions offering the same amenities.<sup>69</sup>

67. Cheslock and Riggs distinguish between elite and non-elite private institutions in analyzing longitudinal increases in sticker prices and institutional aid, noting that “[n]on-elite privates possess the pricing autonomy that public institutions lack but do not possess the wealth and

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67. Gordon C. Winston, *Subsidies, Hierarchy and Peers: The Awkward Economics of Higher Education*, 13 J. HIGHER EDUC. 13, 15-16, 30 (Winter 1999).

68. *Id.* at 30-31.

69. *Id.* at 30.

strong student demand that elite private institutions enjoy.”<sup>70</sup> These authors also rely on institutional rankings from US News & World Report to define “non-elite institutions.”<sup>71</sup> Similar to the approach I take in this report, the authors leverage both institutional and student-level data. For the former, they rely on the Department of Education’s Integrated Postsecondary Education Data System (IPEDS); for the latter I rely on the National Postsecondary Student Aid Study (NPSAS). For my student-level analysis I rely on Defendants’ own structured data that they produced in this litigation, which contain data for substantially larger numbers of students than can be found in either IPEDs or NPSAS.

68. Avery and Hoxby, as a further example, investigated various factors that could affect the prospective student’s college choice. Among the key factors, the authors found that assistance in meeting the costs of higher education motivated students’ decisions of where to matriculate. The authors state: “Students from families with low incomes respond to \$1,000 in grants by raising their probability of matriculation by about 11 percent of their prior probability. Students with medium-low and medium-high family income respond, respectively, by raising the probability of matriculation by about 13 percent.”<sup>72</sup> To extract such impacts, the authors applied a logistic regression approach. In addition, Avery and Hoxby analyzed a dataset of students with characteristics that are likely similar to those of financial aid recipients at Defendant institutions.<sup>73</sup>

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70. John J. Cheslock & Sam O. Riggs, *Ever-Increasing Listed Tuition and institutional aid: The Role of Net Price Differentials by Year of Study*, 45(1) EDUCATIONAL EVALUATION AND POLICY ANALYSIS 3-26, 5 (2023) (“We also examine data for public and elite private institutions. We might expect these institutions to differ from non-elite private institutions in whether and how they utilize net price differentials by year of study. In contrast, elite privates do not appear to utilize differential pricing by year of study.”).

71. *Id.* at 10.

72. Christopher Avery & Caroline M. Hoxby, *Do and Should Financial Aid Packages Affect Students’ College Choices? In College Choices: The Economics of Where to Go, When to Go, and How to Pay for It*, NATIONAL BUREAU OF ECONOMIC RESEARCH 239-301, 265 (2004).

73. *Id.* at 245 (“Our data come from the College Admissions Project, in which we surveyed high school seniors applying to college during the 1999–2000 academic year. The survey was designed to gather data on an unusual group

69. Rose and Sorensen (1992) likewise apply a regression model to estimate the average institutional grant aid.<sup>74</sup> The authors rely on data from the College Entrance Examination Board's American Survey of Colleges (ASC) and the Higher Education General Information Survey (HEGIS) for the 1985-86 academic year to estimate an econometric model of average institutional aid as a function of several variables, including the percentage of students who received aid and the amount of Pell Grant offered.<sup>75</sup> Consistent with my market definition of Elite Private Universities, the authors explain:

It should be noted that public institutions of higher learning are not included in our sample, because observed deviations from predicted tuition will reflect differing levels of governmental support. Consequently, if we were to include them in our sample, we would introduce a significant unobservable random component to tuition which would reduce the efficiency of our coefficient estimates.<sup>76</sup>

70. Elite Private Universities have large endowments that sustain their prestigious status. Brown et al. (2014) found that “Endowments actively reduce payouts relative to their stated payout policies following negative, but not positive, shocks,” evidence consistent with the “endowment hoarding hypothesis” that institutions of higher education seek to maximize the size of their endowments.<sup>77</sup> Because Defendants enjoy such a larger lead against other highly ranked universities, Defendants can be considered to compete in a market unto themselves. Nobel laureate Angus Deaton, as noted above, has explained that elite universities focus on continuously maintaining or

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of students: students with very high college aptitude who are likely to gain admission to and attract merit scholarships from selective colleges.”); *see also id.* 249 (“Although the sample was constructed to include students from every region of the country, it is intentionally representative of students who apply to highly selective colleges and, therefore, nonrepresentative of American high school students as a whole. . . . Fifty-nine percent of the students applied for need-based financial aid, and 41 percent of the families reported that finances influenced their college choice.”).

74. David C. Rose & Robert L. Sorensen, *High Tuition, Financial Aid, and Cross-Subsidization: Do Needy Students Really Benefit?*, 59(1) SOUTHERN ECONOMIC JOURNAL 66-76 (1992).

75. *Id.* at 71.

76. *Id.*

77. Jeffrey R. Brown, Stephen G. Dimmock, Jun-Koo Kang, & Scott J. Weisbenner, *How University Endowments Respond to Financial Market Shocks: Evidence and Implications*, 104(3) AMERICAN ECONOMIC REVIEW 931-962 (2014).

increasing their endowments.<sup>78</sup> Based on their tremendous endowment advantages, Defendants are among the wealthiest post-secondary institutions in the United States.

71. Hill et al. (2005) detail the nexus between endowment wealth and the selectivity that differentiates Elite Private Universities such as Defendants from other post-secondary educational institutions in the United States.<sup>79</sup> The authors rely on nearly 240,000 individual financial aid decisions from 28 highly selective colleges and universities that constitute the Consortium for the Finance of Higher Education (COFHE). Thirteen of the seventeen Defendants in this matter are COFHE members. The authors explain the role that endowment plays in the distribution of financial aid and the benefits that such institutions derive:

A school's per-student wealth translates directly into an ability to subsidize its students-to set an average net price below production costs. Between two schools with the same educational costs per student, the one with the greater wealth can charge students the lower average net price (or provide a more costly education at the price). The most direct effect of wealth on pricing, then, is simply that the wealthier school can set a lower average net price and, other things being equal, offer the prices to its low-income students.<sup>80</sup>

Schools in the relevant market thus can compete more aggressively on prices (net of any grants) compared to schools outside of the relevant market. The authors go on to note that the larger applicant pools that school generosity supports allow greater selectivity and higher student peer quality,”<sup>81</sup> further distinguishing the Elite Private Universities.

72. The relevant market consists of undergraduate Elite Private Universities whose undergraduate programs consistently ranked in the USNWR Top 25 during the Class Period. These include the seventeen Defendants plus Carnegie Mellon University, Harvard University, Princeton

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78. ECONOMICS IN AMERICA at 154.

79. Catharine B. Hill, Gordon C. Winston & Stephanie A. Boyd, *Affordability: Family Incomes and Net Prices at Highly Selective Private Colleges and Universities*, 40(4) JOURNAL OF HUMAN RESOURCES 769-790 (2005).

80. *Id.* at 780. Note that “net price” is defined as the cost of attendance minus any financial aid that does not need to be repaid, whereas “Effective Institutional Price” is the cost of attendance minus any institutional financial aid that does not need to be repaid.

81. *Id.* at 770.



University, Stanford University, and Washington University in St. Louis. These 22 universities each have an average USNWR ranking across the Class Period of at least 25<sup>th</sup> place. All private universities outside of the relevant market have a lower average ranking. All but one university in the relevant market (Carnegie Mellon) was ranked 25 or better in each year during the Class Period.<sup>82</sup> Table 1 below lists the USNWR ranking for each of the 22 universities in the relevant market in each of the twenty years of the Class Period.

TABLE 1: USNWR RANKINGS BY YEAR

University	Average	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003
Princeton University	1.1	1	1	1	1	1	1	1	1	1	1	1	2	1	2	1	1	1	1	1	1
Harvard University	1.6	2	2	2	2	2	2	2	2	2	1	1	1	1	1	2	2	1	1	1	2
* Yale University	3.1	5	4	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2
Stanford University	5.0	6	6	6	7	5	5	4	4	5	6	5	5	4	4	4	4	5	5	5	4
* Massachusetts Institute of Technology	5.1	2	4	3	3	5	7	7	7	7	6	5	7	4	4	7	4	7	5	4	4
* Columbia University	5.9	2	3	3	3	5	5	4	4	4	4	4	4	8	8	9	9	9	9	11	10
* University of Pennsylvania	6.4	8	8	6	8	8	8	9	8	7	8	5	5	4	6	5	7	4	4	5	4
* University of Chicago	7.3	6	6	6	3	3	3	4	4	5	4	5	9	8	8	9	9	15	14	13	12
* California Institute of Technology	8.0	9	9	12	12	10	12	10	10	10	10	5	7	4	6	5	4	7	8	5	4
* Duke University	8.0	9	12	10	8	9	8	8	8	7	8	10	9	10	8	8	8	5	5	5	4
* Dartmouth College	10.7	13	13	12	12	11	11	12	11	10	10	11	9	11	11	11	9	9	9	9	9
* Northwestern University	11.5	9	9	9	10	11	12	12	13	12	12	12	12	12	12	14	14	12	11	11	10
* Johns Hopkins University	12.4	9	9	10	10	11	10	10	12	12	13	13	13	14	15	14	16	13	14	14	15
Washington University in St. Louis	14.0	14	16	19	19	18	19	15	14	14	14	13	12	12	12	12	12	11	11	9	12
* Brown University	14.8	14	14	14	14	14	14	14	16	14	15	15	15	16	16	14	15	15	13	17	17
* Cornell University	14.8	17	18	17	16	14	15	15	15	16	15	15	15	15	14	12	12	13	14	14	14
* Rice University	16.7	17	16	17	16	14	15	18	19	18	17	17	17	17	17	17	17	17	17	16	15
* Vanderbilt University	16.8	14	14	17	14	14	15	15	16	17	17	17	17	17	18	19	18	18	18	19	21
* University of Notre Dame	18.1	19	19	15	18	18	15	18	16	18	17	19	19	20	18	19	20	18	18	19	18
* Emory University	19.7	21	21	21	22	21	20	21	21	20	20	20	20	17	18	17	18	20	20	18	18
* Georgetown University	22.3	23	23	24	22	20	20	21	21	20	21	22	21	23	23	23	23	23	25	23	24
Carnegie Mellon University	23.3	25	26	25	25	25	24	23	25	23	23	23	23	22	22	22	21	22	22	23	21

Note: \* Indicates the school is a Defendant.

Source: U.S. News and World Report rankings.

Table 1 shows that the rankings were largely consistent over the Class Period, and that Defendants comprised the majority of slots in the rankings (17 of 22).

73. I show below in my peer analysis that Elite Private Universities generally do not consider the top public universities—such as University of California Berkeley, University of California Los Angeles, and the University of Virginia, which consistently rank among the Top 25 national universities per USNWR—to be peers. Moreover, these public institutions do not implicate

82. Carnegie Mellon was ranked 26 in 2021, the only yearly instance of an Elite Private University with a ranking lower than 25. *Carnegie Mellon University*, U.S. NEWS AND WORLD REPORT, <https://web.archive.org/web/20201213061508/https://www.usnews.com/best-colleges/carnegie-mellon-university-3242> (archived Dec. 13, 2020).



the key issues related to institutional grant aid—the focus of the Challenged Conduct—because they are priced at such a substantial discount relative to Elite Private Universities.<sup>83</sup> Put differently, because public universities do not need to discount their (already relatively low) prices via substantial institutional grant aid, a hypothetical monopoly provider of Elite Private Universities would not need to control the supply of the handful of top public universities in order to profitably suppress institutional grant aid and thus increase the net price of attending its Elite Private Universities. Accordingly, I exclude elite public universities from the relevant market. If I were to ignore these important differences among the top private and public universities and include these public universities in a larger relevant market comprised of the top 25 national universities, the combined share of the Defendants in that larger market would still be sufficiently large to infer that they possess collective market power, as shown in Appendix 6.

***a. Defendants' Documents Support My Relevant Market Definition***

74. Defendants' own documents indicate they distinguish themselves as elite, private universities from other institutions of post-secondary education in the United States. Defendants regard themselves and a select few other schools, including Harvard, Princeton, Stanford, Carnegie-Mellon, and Washington University in St. Louis, as peers. Documents also indicate that Defendants differentiated themselves as COFHE members, though, as I explain, not all COFHE members are part of the relevant market.

75. [REDACTED]

[REDACTED]

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83. Unique pricing is another one of the six *Brown Shoe* factors that assist courts in defining relevant product markets. Using out of state tuition data from IPEDS, I calculate that the average tuition for the Elite Private Universities between the 1998 to 2022 academic years was \$39,100. The average tuition for public universities included in the USNWR average top 25 ranking between 1998 and 2022 was over \$10,000 less than this (\$28,800).

[REDACTED]

[REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

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84. DUKE568\_0018646.

85. *Id.*

86. DUKE568\_0018649.

[REDACTED]  
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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87. DUKE568\_0018653.

88. DUKE568\_0018650.

[REDACTED]

76. Documents from other Defendants provide further support for my relevant market definition consisting of elite, private universities. Caltech analyzed its prices relative to the Top 20 schools in the USNWR.<sup>89</sup> Likewise, Columbia identified members of the relevant market that I have identified as its peers, based on other top institutions to which it lost admits.<sup>90</sup> Cornell indicated that:

Cornell strives to match the family contribution components and lower loan level of financial aid offers from other Ivy League schools (Brown, Columbia, Dartmouth, Harvard, University of Pennsylvania, Princeton, and Yale), as well as need-based offers from Stanford, MIT, and Duke... Cornell will not consider financial aid offers from institutions that are not included in the list above.<sup>91</sup>

In addition, Cornell identified its top decile of competitors based on the schools against which it went “head-to-head” for students.<sup>92</sup>

77. Dartmouth likewise identifies the top ranked 20 national universities by USNWR plus seven additional schools as its peers. Dartmouth regards all sixteen other Defendants in this matter as its peers.<sup>93</sup> When analyzing its competitors from a student viewpoint, Dartmouth observes in a 2012 document that, of non-matriculants, 54 percent chose to enroll at Harvard, Princeton, Yale, Stanford, or Brown and a total of 73 percent chose to matriculate at “All Ivy, Stanford, MIT, or Duke.”<sup>94</sup> Likewise, Emory considers 20 peer schools, which, along with itself, comprise sixteen of

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89. CALTECH000008240. Caltech also identified its peers as Princeton, Harvard, Yale, MIT, and Stanford. *See* CALTECH000008252.

90. Columbia\_00232661.

91. CORNELL\_LIT0000047694.

92. CORNELL\_LIT0000213582 (“Cornell’s top 10 overlap schools Include all of the Ivy schools, plus Duke, Stanford and MIT. In a head-to-head competition, more admitted students will generally elect to enroll at these schools than at Cornell. Among this group, Duke is the only school that Cornell has a better ‘win percentage.’ The financial aid comparison chart has been updated to include MIT, Duke and Stanford.”).

93. DARTMOUTH\_0000050517. Dartmouth also indicated that it limits the financial analysis it performs based on data from its financial vendor, the Yuba Group, to peer institutions only. DARTMOUTH\_0000050519.

94. DARTMOUTH\_0000143556. Dartmouth’s analysis of cross-admits is also consistent with a limited relevant market to elite private universities. *See* DARTMOUTH\_0000143560; *see also* DARTMOUTH\_0000143561 (“Can

the seventeen Defendants in this matter.<sup>95</sup> Defendant Georgetown University defined its peer groups depending on its winning percentage of cross-admits. This list of twenty schools includes thirteen of the other sixteen Defendants in this case.<sup>96</sup> Johns Hopkins' list of twenty peer institutions includes fifteen Defendants along with itself.<sup>97</sup>

78. Defendants' documents indicate that they consider each other and relatively few other institutions as peers, supporting my use of twenty-two top elite private universities as the relevant market in this case. Defendants' own analyses of cross-admits inform their views, as documents indicate that they track their own success rates against each other.

***b. Hypothetical Monopolist Test (SSNIP Test)***

79. A hypothetical monopolist test (HMT), applied here, asks whether a hypothetical monopoly provider of Elite Private University services that included only the institutions in my defined relevant market could raise prices profitably over competitive levels. For the reasons described below, I perform an HMT here assuming that the Defendants were seeking to maximize endowment size/prestige and not "profits." While antitrust economists often apply the formal HMT when evaluating indirect evidence of market power, idiosyncratic characteristics of higher education in the United States limit its use in this matter. In particular, the formal HMT used in other contexts would need to be modified, as I use it here, in the context of higher education. By formal HMT, I mean a quantification of the actual elasticity of demand faced by a hypothetical monopolist of Elite Private University services as well as the critical elasticity of demand; if the actual elasticity is less

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break this into three types of institutions — 1) HYP and Stanford/M IT — will never be competitive in cross-admits (for variety of reasons); 2) Brown /Columbia/Penn — closest competitors in Ivy+, although we historically don't take more than we lose against these three schools; 3) Cornell — only Ivy+ where we take more than lose.").

95. Emory\_568Lit\_0002799.

96. GTWNU\_0000039045.

97. JHULIT\_0000000808.

than the critical elasticity, then the market need not be expanded beyond the Elite Private Universities.

80. This is not to say that the economic principles underlying the HMT are not useful in defining a relevant market here. In Part I.A., I showed that Elite Private Universities did indeed have market power using direct evidence: My impact regressions show that Defendants significantly raised prices above competitive levels as a result of the Challenged Conduct. Such direct evidence informs the HMT, as it shows that a not-so-hypothetical collection of universities exercised market power over Class Members in the form of significant artificial price inflation. Indeed, this result is consistent with a narrower market than the one I posit here—namely, a market comprised exclusively of Defendants (and thus my market is, if anything, conservative). If outside competition could discipline any exercise of market power, the economic incentive for the Challenged Conduct to exist would likewise dissipate. In the subsequent sections, I show that indirect evidence using the *Brown Shoe* factors and analysis of market shares offers further support for this conclusion.

81. Higher educational institutions do not set Effective Institutional Prices so as to maximize short-term profits—the assumed objective of the hypothetical monopolist in the formal HMT. Instead, they maximize a more complicated objective function, which includes status and cultivating future donors to the schools that drive endowment.<sup>98</sup> As Epple et al. (2019) explain: “Private colleges choose admission, tuition, and expenditure policies to maximize a quality index,

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98. Defendants are all organized as non-profit enterprises. Accordingly, they do not distribute profits to shareholders. Instead, “profits” in this instance can be thought of as a change in net assets, since the residual funds remaining after paying out all expenses are generally reinvested back into the school or into its endowment. See Jo-Anne Williams Barnes, *Do Nonprofit Organizations Have Profit and Loss Statements?*, JFW ACCOUNTING SERVICES (Oct. 10, 2022) (“The statement of activities is a nonprofit’s organization income statement. While a traditional income statement exists to show a profit, or Net Income, a statement of activities exists to show the change in net assets.”).

whereas state colleges choose admission policies and expenditure to maximize aggregate achievement of their in-state students facing state-regulated tuitions.”<sup>99</sup>

**c. *Brown Shoe Factors***

82. Practical indicia known as the *Brown Shoe* factors illustrate that undergraduate services at Elite Private Universities ranked in the USNWR Top 25 constitute a market unto itself. The first of these practical indicia is “industry or public recognition.”<sup>100</sup> USNWR is considered the premier ranking institution for U.S. schools.<sup>101</sup> That an industry authority considers the same set of schools to be among the Elite Private Universities across such a long time period supports the existence of an Elite Private University market. Talented high school students covet slots at Elite Private Universities, as doing so is perceived to be the best route to achieving social status and promoting one’s employment prospects.<sup>102</sup> The Elite Private Universities themselves perceive other

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99. Dennis Epple, Richard Romano, Sinan Sarpça, Holger Sieg, & Melanie Zaber, *Market Power and Price discrimination in the US Market for Higher Education*, 50(1) RAND JOURNAL OF ECONOMICS 201-225, 202 (Spring 2019).

100. *Merger Guidelines* at 41 (“A relevant market can be identified from evidence on observed market characteristics (‘practical indicia’), such as *industry or public recognition of the submarket* as a separate economic entity, the product’s peculiar characteristics and uses, unique production facilities, distinct customers, distinct prices, sensitivity to price changes, and specialized vendors.”) (emphasis added).

101. DARTMOUTH\_0000158513 (“In the US News ranking—the most widely referenced ranking and the main focus of this paper—Dartmouth has held in ninth-place for the past 5 years.”); NULIT-0000144247 (using USNWR rankings as the standard ranking for academic institutions and stating “Northwestern has consistently ranked among the top undergraduate research universities in the nation, and 2002 was no exception. In 2002, Northwestern ranked 10th in the US News & World Report ranking of top undergraduate research institutions, improving its rank from 12th in 2001.”); JHULIT\_0000007855 (Johns Hopkins uses the USNWR Top 20 as a benchmark for its financial aid strategy); Juan Saavedra *et al.*, *Why College Reputation Matters so Much to Students and Employers*, USC SCHAEFFER, THE EVIDENCE BASE (Feb. 8, 2016), <https://healthpolicy.usc.edu/evidence-base/why-college-reputation-matters-so-much-to-students-and-employers/> (“Experience goods are typically purchased based on reputation or recommendation. This is why consumers are willing to pay more for wines that are highly rated by the likes of Robert Parker, why referrals are crucial when choosing doctors and why prospective students and parents pay so much attention to US News and World Report college rankings.”).

102. A *New York Times* article describes the prevalent use of the USNWR rankings by students and parents for status and job prospects: “Interviews with students, parents and education professionals suggest that the [USNWR] rankings are firmly established as a go-to part of the college selection process across the country. It is true for students vying for the Top 10[.]” “In the most competitive high schools, the college rankings have reached the level of obsession.” “Many parents...approach the rankings as make-or-break deals, the key to lifelong success as well as bragging rights.” When discussing choosing a college, one student said she used the rankings to choose a school, stating: “When you go to a better school, people assume you will get a better job.” Stephanie Saul, *Despite Years of Criticism, the U.S. News*

Elite Private Universities to be their closest competitors.<sup>103</sup>

83. Another *Brown Shoe* factor is distinct prices.<sup>104</sup> Defendants meet this factor because they charge significantly higher prices for their product relative to all public universities and to many other private universities. Costs of attendance (sometimes referred to herein as “sticker prices”) at Defendant institutions, including tuition, fees, room, board, and incidental expenses, now typically exceeds \$80,000 per academic year. For example, for academic year 2023-2024, Duke charged \$66,172 for tuition and fees, with room and board an additional \$19,066, for an approximate cost of attendance totaling \$85,000 per year.<sup>105</sup> Consistent with their objective of maximizing exclusivity and prestige, such institutions realize that their respective student bodies should not simply consist only of those who can afford cost of attendance. For example, the net price for the average student receiving need-based aid at Duke equals \$27,416, a 68 percent discount from the \$85,238 sticker price noted above.<sup>106</sup> In comparison, the net price at the University of North Carolina equals \$9,260

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*College Rankings Live On*, NEW YORK TIMES (Sept. 15, 2022), <https://www.nytimes.com/2022/09/15/us/us-news-college-ranking.html>.

103. This is reflected by who the Elite Private Universities consider as their peers, since “[p]eer institutions are institutions that are selected to be used for comparative analysis” and “usually have common qualities such as level of resources, student headcount, and institutional goals.” *Institutional Research and Analytics*, UNIVERSITY OF ARKANSAS AT LITTLE ROCK, <https://ualr.edu/institutionalresearch/peer-institutions/> (last visited Apr. 2024). The IPEDS data contains schools’ lists of self-reported peers, as I describe in my peer analysis. Even institutions who do not list peers with the U.S. Department of Education, such as Duke, refer to other Elite Private Universities as their peers. *See Duke Joins Peer Universities in Pledge Reaffirming Commitment to Progress on Climate Change*, DUKE TODAY (Jun. 5, 2017), <https://today.duke.edu/2017/06/duke-joins-peer-universities-pledge-reaffirming-commitment-progress-climate-change> (listing Brown, Columbia, Cornell, Dartmouth, Duke, Georgetown, Harvard, Johns Hopkins, MIT, Stanford, Penn, and Yale as aforementioned “peers”); DARTMOUTH\_0000158513 (“In the US News ranking—the most widely referenced ranking and the main focus of this paper—Dartmouth has held in ninth-place for the past 5 years.”).

104. *Merger Guidelines* at 41 (“A relevant market can be identified from evidence on observed market characteristics (‘practical indicia’), such as industry or public recognition of the submarket as a separate economic entity, the product’s peculiar characteristics and uses, unique production facilities, distinct customers, *distinct prices*, sensitivity to price changes, and specialized vendors.”) (emphasis added).

105. *Duke University Tuition, Cost & Financial Aid*, U.S. NEWS & WORLD REPORT, <https://www.usnews.com/best-colleges/duke-university-2920/paying> (last visited Apr. 2024).

106. *Id.*



for in-state students and \$22,109 for out-of-state students.<sup>107</sup> The median family income in North Carolina, where Duke is located, equals approximately \$74,849 for a family with two earners.<sup>108</sup>

84. Record evidence indicates that many of the Defendants themselves recognized highly ranked schools as their primary competitors.<sup>109</sup> This is another practical indicator that Elite Private Universities constitute a relevant market. Defendant institutions use USNWR rankings to identify benchmark schools to compare their financial aid, staff compensation, graduation rates, admissions rates, and other measures against each other.<sup>110</sup> In internal planning memos and strategy documents, Defendants repeatedly identify other Defendants (both COFHE and top USNWR schools) as their peers.<sup>111</sup> In one planning document analyzing Dartmouth's competitive position, Dartmouth primarily uses the USNWR rankings to identify Dartmouth's peers as the top twenty ranked schools.<sup>112</sup> Another document shows Vanderbilt considering universities within five ranks of itself and other top twenty USNWR schools as its competitors.<sup>113</sup> [REDACTED]

[REDACTED]<sup>114</sup> Taken together, the record evidence shows that the Defendant schools used the USNWR rankings to

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107. *University of Northern Carolina at Chapel Hill Tuition & Financial Aid*, U.S. NEWS & WORLD REPORT, <https://www.usnews.com/best-colleges/university-of-north-carolina-at-chapel-hill-2974/paying> (last visited Apr. 2024). In-state students constitute approximately 82 percent of the student body at the University of North Carolina at Chapel Hill. *See In-State Students Enrolled in UNC School*, THE JAMES G. MARTIN CENTER FOR ACADEMIC RENEWAL, <https://www.jamesgmartin.center/2019/08/did-you-know-unc-system-bucks-trend-favoring-out-of-state-students/> (last visited Apr. 2024).

108. *Census Bureau Median Family Income By Family Size*, JUSTICE.GOV, [https://www.justice.gov/ust/eo/bapcpa/20230401/bci\\_data/median\\_income\\_table.htm](https://www.justice.gov/ust/eo/bapcpa/20230401/bci_data/median_income_table.htm) (last visited Apr. 2024).

109. DARTMOUTH\_0000050515 (“We currently compare to the following 27 peer institutions. The list is based on the top 20 National Universities in the US News and World Report ranking.”); VANDERBILT-00013572.

110. NULIT-0000144247; Columbia\_00246836.

111. PENN568-LIT-00027223 (Penn analyzes cross-admit competition against their “COFHE peers”); JHULIT\_0000007855; DARTMOUTH\_0000158513; NULIT-0000144247.

112. DARTMOUTH\_0000158513 (“In the US News ranking—the most widely referenced ranking and the main focus of this paper—Dartmouth has held in ninth-place for the past 5 years.”); DARTMOUTH\_0000050515 (“We currently compare to the following 27 peer institutions. The list is based on the top 20 National Universities in the US News and World Report ranking.”).

113. VANDERBILT-00013572 (Vanderbilt uses top twenty USNWR schools as a benchmark).

114. DUKE568\_0107675.

identify other top schools as their competitors and that the top USNWR schools constitute a relevant market under the first *Brown Shoe* factor.<sup>115</sup>

***d. Peer Analysis Reveals That Defendants Perceive Themselves to Be Distinct from Institutions Outside of the Relevant Market***

85. To bolster the conclusion that Defendants perceive the undergraduate services offered by Elite Private Universities as a separate market, I perform a “peers analysis” to empirically identify such recognition. I use two sources of data for this peers exercise: (i) IPEDS data, and (ii) data from the Fiske Guide to Colleges. IPEDS data, from the U.S. Department of Education’s National Center for Education Statistics, contain schools’ lists of self-reported peers each year from 2010 to 2022. There is little variability in these peer lists from year to year. For my analysis, I consider institution B to be a peer of institution A if each school is listed as such in the IPEDS data for each of the thirteen years from 2010 to 2022, inclusive. The Fiske Guide to Colleges contains schools’ self-reported lists of peer institutions. I use the peers’ data from the 2020 edition of this publication.<sup>116</sup> I consider (i) the 110 institutions ranked by Avery et al (2013), and (ii) institutions with a Carnegie classification of either “Doctoral/Research Universities—Extensive” or “Baccalaureate Colleges—Liberal Arts”<sup>117</sup> as the largest potential set of institutions for consideration, for a total of 373 institutions. The bottom line from all the comparisons that follow is that the institutions in the different groups view themselves as belonging to different relevant markets.

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115. See *Brown Shoe Co., Inc. v. United States*, 370 U.S. 294 (1962) (“The boundaries of such a submarket may be determined by examining such practical indicia as industry or public recognition of the submarket as a separate economic entity, the product’s peculiar characteristics and uses, unique production facilities, distinct customers, distinct prices, sensitivity to price changes, and specialized vendors.”).

116. EDWARD B. FISKE, FISCHE GUIDE TO COLLEGES 2020 (Sourcebook 36th ed. 2019).

117. Avery, Glickman, Hoxby & Metrick, *A Revealed Preference Ranking of US Colleges and Universities*, 128(1) QUARTERLY JOURNAL OF ECONOMICS 425-467 (2013). Of these 373 schools, by the Carnegie classification we have 214 that are Baccalaureate Colleges--Liberal Arts, 152 that are Doctoral/Research Universities—Extensive, five that are Doctoral/Research Universities—Intensive, one that is Masters Colleges and Universities I and one that is Institutions of Engineering and Technology.

86. Table 2 below lists peer counts for the universities in the relevant market from both the IPEDS data and the Fiske data. These counts are confined to the universe of 373 institutions considered. It also reports peer counts obtained by combining both the IPEDS data and the Fiske data. Columns labelled “Peers” count other institutions listed by the relevant institution as its peers while, conversely, columns labelled “Reverse Peers” count instances of other institutions listing the relevant institution as a peer. And columns labelled “Two-way” count the list of other institutions that are both Peers and Reverse Peers.

TABLE 2: COUNT OF PEERS AND REVERSE PEERS

School	IPEDS				Fiske				Combined			
	Peers	Reverse peers	Two-way	Peer / Reverse	Peers	Reverse peers	Two-way	Peer / Reverse	Peers	Reverse peers	Two-way	Peer / Reverse
Brown	17	23	10	0.74	8	33	3	0.24	18	47	11	0.38
CalTech	10	13	4	0.77	8	3	2	2.67	12	14	5	0.86
Chicago	13	19	8	0.68	8	14	0	0.57	13	27	8	0.48
Columbia	n.a.	19	0	n.a.	8	13	6	0.62	8	24	6	0.33
Cornell	9	28	6	0.32	5	26	2	0.19	9	38	6	0.24
Dartmouth	9	15	4	0.60	8	10	4	0.80	13	22	8	0.59
Duke	n.a.	19	0	n.a.	8	17	2	0.47	8	27	2	0.30
Emory	6	18	3	0.33	6	6	0	n.a.	7	22	3	0.32
Georgetown	10	12	1	0.83	8	9	2	0.89	13	17	3	0.76
Hopkins	12	18	3	0.67	8	2	0	n.a.	12	19	3	0.63
MIT	7	21	5	0.33	8	12	5	0.67	9	25	7	0.36
Northwestern	24	20	10	1.20	8	16	3	0.50	25	30	12	0.83
Notre Dame	25	9	1	2.78	6	5	1	1.20	27	11	2	2.45
Penn	10	24	6	0.42	8	22	7	0.36	12	32	9	0.38
Rice	4	16	2	0.25	8	2	0	4.00	11	17	2	0.65
Vanderbilt	23	15	7	1.53	8	9	1	0.89	23	21	7	1.10
Yale	11	19	8	0.58	8	25	8	0.32	11	30	10	0.37
Carnegie	12	19	6	0.63	7	6	0	1.17	15	21	6	0.71
Harvard	3	19	2	0.16	4	32	4	0.13	4	36	4	0.11
Princeton	n.a.	22	0	n.a.	5	18	4	0.28	5	29	4	0.17
Stanford	10	23	8	0.43	8	28	8	0.29	12	34	12	0.35
Wash U	24	16	10	1.50	8	11	2	0.73	24	20	10	1.20
<b>Average</b>	12.6	18.5	4.7	<b>0.68</b>	7.3	14.5	2.9	<b>0.50</b>	13.2	25.6	6.4	<b>0.52</b>

87. For example, Table 2 reflects Harvard reporting Yale, Princeton, and Stanford as peers in the IPEDS data, with Yale and Stanford (and 17 additional schools) listing Harvard as a peer. Thus, Harvard has three IPEDS peers, 19 IPEDS reverse peers, and two IPEDS two-way peers (Yale and Stanford). In the Fiske data, Harvard lists MIT in addition to Yale, Princeton, and Stanford as peers, while these four institutions and 28 others list Harvard as a peer. And considering both the IPEDS and the Fiske data (the “Combined” section right-most in Table 2), Harvard has four peers

(Princeton, MIT, Stanford, and Yale), 36 reverse peers and four two-way peers (again, Princeton, MIT, Stanford, and Yale).

88. Note that the IPEDS data have a high degree of variability in the number of reported peers. Three institutions (Columbia, Duke, and Princeton) list no peers, while Notre Dame lists 25 peers. In contrast, the Fiske data have a much narrower range of peer counts, ranging from four to eight. In the analysis that follows, I focus on the peers as reported either by IPEDS or Fiske, which I refer to as the Combined data.

89. The ratio of the peer count to the reverse peer count is a measure of quality. For example, for Harvard (with the Combined data) it is  $4 / 36 = 0.11$ . Table 3 below reports peer averages and ratios for the Combined data. The left-hand side of Table 3 reproduces the Combined data from the right-most side of the Table 3. The right-hand side of Table 3 gives peer-count summaries for two subsets of the schools outside of the relevant market: (i) the ten highest USNWR-ranked universities not in the relevant market, and (ii) the USNWR Top 10 liberal arts colleges.

TABLE 3: PEERS DATA FOR IPEDS AND FISKE COMBINED

Elite Private Universities					Other highly ranked USNWR schools				
School	Peers	Reverse peers	Two- way	Peer / Reverse	School	Peers	Reverse peers	Two- way	Peer / Reverse
					<b>Ten highly ranked universities</b>				
Brown	18	47	11	0.38	Brandeis	26	14	5	1.86
CalTech	12	14	5	0.86	Michigan	57	36	25	1.58
Chicago	13	27	8	0.48	Tufts	10	20	0	0.50
Columbia	8	24	6	0.33	UC Berkeley	4	46	2	0.09
Cornell	9	38	6	0.24	UCLA	8	23	0	0.35
Dartmouth	13	22	8	0.59	UNC	13	36	8	0.36
Duke	8	27	2	0.30	USC	27	29	8	0.93
Emory	7	22	3	0.32	Virginia	23	27	5	0.85
Georgetown	13	17	3	0.76	Wake Forest	16	11	3	1.45
Hopkins	12	19	3	0.63	William & Mary	13	13	2	1.00
MIT	9	25	7	0.36					
Northwestern	25	30	12	0.83	<b>Average</b>	19.7	25.5	5.8	<b>0.77</b>
Notre Dame	27	11	2	2.45	<b>Overall Average</b>	15.3	25.6	6.2	<b>0.60</b>
Penn	12	32	9	0.38					
Rice	11	17	2	0.65	<b>Top 10 liberal arts colleges</b>				
Vanderbilt	23	21	7	1.10	Amherst	8	29	2	0.28
Yale	11	30	10	0.37	Bowdoin	25	29	16	0.86
Carnegie	15	21	6	0.71	Carleton	17	43	13	0.40
Harvard	4	36	4	0.11	Claremont	18	9	4	2.00
Princeton	5	29	4	0.17	Davidson	19	29	10	0.66
Stanford	12	34	12	0.35	Middlebury	25	35	17	0.71
Wash U	24	20	10	1.20	Pomona	14	28	5	0.50
					Swarthmore	17	27	9	0.63
<b>Average</b>	13.2	25.6	6.4	<b>0.52</b>	Wellesley	36	20	7	1.80
					Williams	15	32	9	0.47
					<b>Average</b>	19.4	28.1	9.2	<b>0.69</b>
					<b>Overall Average</b>	15.2	26.4	7.3	<b>0.57</b>
					<b>Average for all 42 schools</b>	16.2	26.2	6.9	<b>0.62</b>

90. Note also that the overall peer-to-reverse-peer ratio for the relevant market is 0.52. This compares with 0.77 for the ten other highly ranked universities, and 0.69 for the Top 10 liberal arts colleges. These differentials support the notion that these top institutions from outside the relevant market are viewed as distinct from the Elite Private Universities along the dimension of this peer-to-reverse-peer ratio. This conclusion is also reflected in the average overall peer-to-reverse-peer ratios for the top 32 universities. This ratio is 0.60. And the average overall ratio for the Elite Private Universities plus the Top 10 colleges is 0.57. And, finally, the overall average for the full set of 42 institutions is 0.62. So regardless of the dimension in which one expands the market beyond the Elite Private Universities, the peer-to-reverse-peer ratio measure of quality falls, reinforcing the conclusion that the different groups of institutions are viewed as belonging to separate markets.

91. The left-most column of Table 4 shows the fraction of peers, reverse peers, and two-way peers for the Elite Private Universities. This table also leads to the same conclusion as in the previous paragraph. For example, 51 percent of Elite Private Universities are listed as peers by other Elite Private Universities. This figure compares with just 0.6 of one percent of outside schools that are listed as peers by Elite Private Universities. And for the universe of 373 institutions, 3.6 percent are listed as peers by Elite Private Universities. Table 4 also reports a market/non-market odds ratio. So, for example, for the Elite Private Universities, the odds ratio is  $89.6 = 51.03\% / 0.57\%$ . Clearly the higher the odds ratio, the more self-contained a market is in terms of peer recognition. Table 4 also reports these peer patterns for three “expanded” markets; the Elite Private Universities (i) plus the next ten most highly ranked universities, (ii) plus the Top 10 liberal arts colleges, and (iii) plus the twenty institutions from both these additional groups.

TABLE 4: PEER RECOGNITION

Pairings	Market:			
	Elite Private Universities	plus ten more highly ranked universities	plus Top 10 liberal arts colleges	plus both
<b>Peers</b>				
Market to Market	51.03%	37.79%	35.64%	29.14%
Market to non-Market	0.57%	0.93%	1.10%	1.21%
Market to all	3.55%	4.09%	4.06%	4.35%
Odds ratio	89.6	40.8	32.4	24.1
<b>Reverse peers</b>				
Market to Market	51.03%	37.79%	35.64%	29.14%
Market to non-Market	4.09%	3.95%	4.39%	4.21%
Market to all	6.86%	6.85%	7.07%	7.02%
Odds ratio	12.5	9.6	8.1	6.9
<b>Two-way peers</b>				
Market to Market	24.38%	14.45%	16.21%	11.11%
Market to non-Market	0.28%	0.46%	0.60%	0.68%
Market to all	1.71%	1.66%	1.94%	1.85%
Odds ratio	85.6	31.5	26.8	16.4

92. Note that the peers odds ratios for the three expanded markets shown in Table 4 are all substantially lower than those for the relevant market. Thus, expanding the relevant market by incorporating these other schools significantly dilutes the strength of the peer recognition network. A broader definition of the relevant market is, to a certain extent, at odds with Elite Private Universities' respective perceptions of their market counterparts.

93. The lower portion of Table 4 gives the same summary for reverse peers and two-way peers. Note that for reverse peers the odds ratios for the three expanded markets (9.6, 8.1 and 6.9, respectively) are all lower than the odds ratio for the relevant market (12.5), but the disparity is much less for reverse peers than it is for peers. This comparison reflects the aspirational nature of reverse peer listing—these institutions that are outside the relevant market wish to view themselves as being



inside it. But for peers, and also for two-way peers, the odds ratio for the relevant market is substantially higher than that for any of the three expanded markets. Expanding the relevant market affirms the peer perceptions of only the expansion institutions, with the peer perceptions of Elite Private Universities being negated.

*e. Distances Travelled by Students Relative to Their Homes Reveals That Students Perceive the Elite Private Universities to Be Distinct*

94. The undergraduate education market is characterized by product differentiation. One important dimension of this differentiation is perceived education quality: the higher the perceived quality of an institution, the greater distance students would be willing to travel to attend that institution. The IPEDS data on students' residences before matriculating allow an empirical investigation of this hypothesis. If students were willing to travel greater distances to attend an Elite Private University compared to others, such evidence would bolster the relevant market.

95. From IPEDS one can observe data on the state of residence of undergraduates before matriculating for each institution. These data are available for each of the twenty years of the Class Period. Institutions are required to submit state-of-residence data to IPEDS every other year, and they are encouraged to do so every year. The Elite Private Universities submitted data an average of 18.2 of the 20 years.<sup>118</sup>

96. I employ U.S. Census Bureau data to identify the latitude and longitude of the center of population for each state and the District of Columbia. Combining these data with the IPEDS data on state of residence allows me to construct the distribution of distances from the state of residence to the institution's state.

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118. The minimum number of years of data submitted was 12, by Johns Hopkins. Eleven of the 22 Elite Private Universities submitted data for all 20 years.

97. For example, for the University of Chicago in 2020, 11.4 percent of undergraduates were from Illinois, and so have a distance of 0 miles. Then we have 1.0 percent of undergraduates from the next closest state, Indiana, with a distance of 137 miles. This is followed by 1.5 percent of undergraduates from Wisconsin, with a distance of 170 miles. The distribution of distances for Chicago students can continue to be mapped out, finishing with the students farthest from home, the 0.5 percent of undergraduates from Oregon, a distance of 1,736 miles.<sup>119</sup> Certain features of these distributions of distances are of interest. For example, the mean distance from home for Chicago undergrads in 2020 was 796 miles.

98. Now, ask the question: “Does the geographic distribution of Chicago undergrads in 2020 look more like a local or national student body?” To answer this question, I calculate the mean distance of Chicago’s student body assuming the share of its students from each state match that state’s population share to the U.S. as a whole. For example, 3.8 percent of Americans live in Illinois. I calculate the same proportion for every other state, and then apply those proportions to the Chicago undergraduate student body in 2020. The result from applying these population shares to the distance of each state from Chicago is a hypothetical mean distance from home of 831 miles. This distance is quite close to the actual mean distance of 796 miles. This comparison supports the hypothesis that the geographic market for an undergraduate education at the University of Chicago is a national market. To make the foregoing comparison more concrete, I compute the ratio of the actual mean to the hypothetical mean with a nationally representative student body, which in this case would be:  $796 / 831 = 0.958$ . That this ratio is close to 1 is another way of expressing empirically that the students are willing to travel great distances to attend the University of Chicago, supporting the national reach and Elite Private University market status of the University of Chicago.

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119. There were no undergraduates at University of Chicago from Alaska or Hawaii in 2020.

99. Table 5 below shows the mean distance for students, as well as the hypothetical mean for a nationally representative student body, for several groups of institutions. The table also shows the ratio of the two means, as well as the 25<sup>th</sup>, 50<sup>th</sup>, and 75<sup>th</sup> percentile of the distribution of distances. It does this first for the relevant market of the Elite Private Universities. The upper panel of the table also shows these distances for the ten highest ranked universities outside the relevant market, and for the top ten liberal arts colleges. The lower panel shows the relevant market plus the ten highly ranked universities outside the relevant market, plus the top ten colleges, and plus both sets of additional institutions.

TABLE 5: DISTANCE TRAVELED FROM HOME

		<b>Elite private universities</b>	<b>Ten highly ranked universities</b>	<b>Top 10 liberal arts colleges</b>	
<b>Mean</b>	<b>Actual (miles)</b>	757	352	814	
	<b>Hypothetical (miles)</b>	1057	1186	1221	
	<b>Actual / Hypothetical</b>	0.72	0.30	0.67	
<b>25th percentile</b>	<b>Actual (miles)</b>	141	20	143	
	<b>Hypothetical (miles)</b>	554	702	711	
	<b>Actual / Hypothetical</b>	0.26	0.03	0.20	
<b>50th percentile</b>	<b>Actual (miles)</b>	488	77	481	
	<b>Hypothetical (miles)</b>	921	1091	1137	
	<b>Actual / Hypothetical</b>	0.53	0.07	0.42	
<b>75th percentile</b>	<b>Actual (miles)</b>	1175	456	1322	
	<b>Hypothetical (miles)</b>	1381	1574	1647	
	<b>Actual / Hypothetical</b>	0.85	0.29	0.80	
		<b>Elite private universities only</b>	<b>plus ten more highly ranked universities</b>	<b>plus Top 10 liberal arts colleges</b>	<b>plus both groups</b>
<b>Mean</b>	<b>Actual (miles)</b>	757	628	775	671
	<b>Hypothetical (miles)</b>	1057	1097	1108	1127
	<b>Actual / Hypothetical</b>	0.72	0.57	0.70	0.60
<b>25th percentile</b>	<b>Actual (miles)</b>	141	103	142	112
	<b>Hypothetical (miles)</b>	554	600	603	627
	<b>Actual / Hypothetical</b>	0.26	0.17	0.24	0.18
<b>50th percentile</b>	<b>Actual (miles)</b>	488	357	486	386
	<b>Hypothetical (miles)</b>	921	974	988	1013
	<b>Actual / Hypothetical</b>	0.53	0.37	0.49	0.38
<b>75th percentile</b>	<b>Actual (miles)</b>	1175	946	1220	1032
	<b>Hypothetical (miles)</b>	1381	1441	1464	1490
	<b>Actual / Hypothetical</b>	0.85	0.66	0.83	0.69

100. The lower panel of Table 5 shows a clear pattern: Adding institutions outside of the relevant market of Elite Private Universities decreases the student distance relative to a hypothetical

nationally representative distribution of students. That students are more likely to “vote with their feet” to attend an Elite Private University, more so than when other institutions are included, provides evidence that students perceive a quality distinction between Elite Private Universities and other institutions. This is evidence of the second *Brown Shoe* factor—peculiar characteristics and uses—in that the Elite Private University market draws a largely national undergraduate student body, much more so than schools outside this market.

*f. Pairwise Comparisons of Admits Further Illustrate the Distinct Nature of the Elite Private University Market*

101. USNWR rankings rely on a pre-set weighting system using only a handful of criteria, subjectively selected by USNWR. An alternative approach is to base ranking solely on the revealed preferences of students who compare one school at which they are admitted to another such school, in a “pairwise” fashion. This approach captures the heterogeneity of students as well as of schools and uses a weighting scheme that avoids any subjective weighting and/or criteria selection. In addition, while USNWR provides rankings for universities that are distinct from their rankings for liberal arts colleges, a revealed preference ranking method allows for a combined ranking of all institutions (*i.e.*, universities and colleges).

102. Methods exist to aggregate up these pairwise preferences into an overall “revealed preference college ranking.”<sup>120</sup> In constructing this alternative ranking, I use data from parchment.com. This website gives pairwise enrollment fractions for students admitted to both institutions in the pair.<sup>121</sup> The data are from students subscribing to parchment.com college

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120. Xingwei Hu, *Sorting big data by revealed preference with an application to college ranking*, 7(30) JOURNAL OF BIG DATA 1-26 (2020).

121. Also of interest is the number of students in the parchment.com data who were admitted to both schools in a pairing. These student counts are not reported directly on the website. However, the website does report the lower limit and the upper limit on a 95% confidence interval, which suffices for these student counts to be calculated.

counseling services in the last ten years. Students using this pay service are reasonably representative of the types of students in the market for an Elite Private University education. Using established methods, I can aggregate these pairwise comparisons to give the revealed preference ranking.

103. By using the parchment.com comparisons for all pairings of the 22 universities in the relevant market, I calculate an “authority distribution” of probabilities that capture the relative importance, or “authority,” of each institution in the relevant market. Table 6 shows this authority distribution for these 22 institutions, listed in decreasing order of authority, as compared to the average USNWR ranking over the Class Period.

TABLE 6: REVEALED PREFERENCE RANKING AND  
USNWR RANKING OF ELITE PRIVATE UNIVERSITIES

University	Revealed Preference Ranking	USNWR Average
Harvard University	0.246	1.6
Stanford University	0.190	5.0
* Massachusetts Institute of Technology	0.095	5.1
* Yale University	0.090	3.1
Princeton University	0.068	1.1
* University of Chicago	0.047	7.3
* University of Pennsylvania	0.042	6.4
* Columbia University	0.038	5.9
* Duke University	0.034	8.0
* Northwestern University	0.022	11.5
* Brown University	0.021	14.8
Washington University in St. Louis	0.021	14.0
Cornell University	0.015	14.8
* Dartmouth College	0.015	10.7
* University of Notre Dame	0.012	18.1
* Vanderbilt University	0.009	16.8
* California Institute of Technology	0.008	8.0
* Johns Hopkins University	0.008	12.4
* Georgetown University	0.007	22.3
* Rice University	0.006	16.7
* Carnegie Mellon University	0.004	23.3
* Emory University	0.003	19.7

Notes: \* Indicates school is a Defendant. These 22 probabilities sum to 1.

104. As Table 6 shows, students' revealed preferences show Harvard, Stanford and MIT being the highest ranked universities in the relevant market. Harvard's "authority" score of 0.246 indicates that it commands a 24.6 percent influence over the relevant market, even though it constitutes one of 22 (or 4.5 percent) of the institutions in this market. The authority scores indicate not just the ranking of institutions, but also the strength of the revealed preference ranking. For example, Harvard, Stanford, and MIT's authority scores being 0.246, 0.190 and 0.095, indicate that the "distance" between third-ranked MIT and second-ranked Stanford is much greater than the distance between Stanford and first-ranked Harvard. It is also worth noting that the correlation

between the revealed preference authority ranking and the USNWR rankings is quite high. Of further note is that the four universities ranked two through five in the revealed preference rankings behind Harvard—Stanford, MIT, Yale, and Princeton—are the four two-way peers of Harvard discussed earlier. Thus, at the upper end of perceived school quality, students' revealed preferences and industry recognition exactly coincide.

105. One can add additional schools to the set of Elite Private Universities to see their impact on the revealed preference ranking. The impact being minimal would constitute evidence from students' own revealed preferences that these additional schools do not belong in the relevant market. The left-most columns of Table 7 show what happens when the market is expanded to 32 schools by adding in the ten most highly ranked universities that are not in the relevant market, the middle columns show the market expanded to 32 schools by adding in the top ten liberal arts colleges, and the right-most columns show the market expanded to 42 schools by adding in both sets of additional schools.



TABLE 7: REVEALED PREFERENCE RANKINGS WITH ADDITIONAL INSTITUTIONS ADDED

Plus ten more highly ranked universities		Plus the Top 10 Liberal Arts Colleges		Plus both	
Harvard	0.204	Harvard	0.233	Harvard	0.195
Stanford	0.163	Stanford	0.180	Stanford	0.156
MIT	0.082	MIT	0.090	MIT	0.078
Yale	0.073	Yale	0.088	Yale	0.072
Princeton	0.059	Princeton	0.066	Princeton	0.057
Chicago	0.043	Chicago	0.046	Chicago	0.042
Penn	0.040	Penn	0.040	Penn	0.038
Columbia	0.033	Columbia	0.037	Columbia	0.032
Duke	0.030	Duke	0.032	Duke	0.029
a UCLA	0.028	Brown	0.022	a UC Berkeley	0.026
a UC Berkeley	0.028	Northwestern	0.020	a UCLA	0.026
a Michigan	0.028	Wash U	0.020	a Michigan	0.026
Brown	0.022	Dartmouth	0.015	Brown	0.022
Northwestern	0.021	Cornell	0.015	Northwestern	0.020
Wash U	0.018	Notre Dame	0.011	Wash U	0.018
Cornell	0.017	Vanderbilt	0.009	Cornell	0.016
a USC	0.014	CalTech	0.008	Dartmouth	0.014
Notre Dame	0.014	Johns Hopkins	0.008	a USC	0.013
Dartmouth	0.014	b Pomona	0.007	Notre Dame	0.013
a Virginia	0.010	Georgetown	0.007	a Virginia	0.009
Vanderbilt	0.009	b Williams	0.007	Vanderbilt	0.009
CalTech	0.008	Rice	0.006	CalTech	0.008
Johns Hopkins	0.008	b Swarthmore	0.006	Johns Hopkins	0.008
Georgetown	0.007	b Bowdoin	0.005	b Pomona	0.007
Rice	0.006	b Amherst	0.004	Georgetown	0.007
a UNC	0.005	Carnegie	0.004	Rice	0.006
Carnegie	0.004	b Wellesley	0.003	b Williams	0.006
a Tufts	0.003	b Claremont	0.003	b Swarthmore	0.005
a William & Mary	0.003	b Middlebury	0.003	a UNC	0.005
Emory	0.003	Emory	0.003	b Bowdoin	0.004
a Wake Forest	0.002	b Carleton	0.003	b Amherst	0.004
a Brandeis	0.002	b Davidson	0.002	Carnegie	0.004
				a Tufts	0.004
				a William & Mary	0.003
				b Claremont	0.003
				Emory	0.003
				b Wellesley	0.003
				b Middlebury	0.003
				b Carleton	0.002
				a Wake Forest	0.002
				b Davidson	0.002
				a Brandeis	0.002

Notes: a and b denote, respectively, ten highly ranked universities and the Top 10 colleges.

106. As Table 7 shows, the impact of adding ten more highly ranked universities to the relevant market is not substantial. The highest nine ranked schools remain as in Table 6, with the order of the ranking unchanged. The total authority of the ten additional universities is 0.123.

107. Table 7 also shows the impact of expanding the market by adding in the Top 10 liberal arts colleges. The highest 18 ranked schools in the Elite Private University market remain the same. And the highest ranked liberal arts college is Pomona at 19. The Top 10 liberal arts colleges (with Pomona, the highest ranked at 19) have a total authority of only 0.043. The right-most columns of Table 7 also shows that an expanded market of all 42 schools leaves the first nine ranked Elite Private Universities unchanged, with the additional twenty schools having a total authority of only 0.155, as compared to the total authority of 0.495 for the lowest 20 ranked schools in the Elite Private University market. In short, according to students' own revealed preferences, there is minimal evidence that the relevant market as defined as Elite Private Universities should be expanded further. This demonstrates that the fourth *Brown Shoe* factor, which addresses distinct customers, further supports the existence of a relevant market for Elite Private Universities services.

## **2. Defendants Collectively Possess a High Share in the Relevant Market**

108. Using data from IPEDS, I calculate Defendants' collective market share of Elite Private University services using three distinct market share metrics. I calculate that Defendants collectively possess approximately 77 to 79 percent of the Elite Private University services.

109. First, I calculate Defendants' unweighted collective market share—that is, I divide the total number of Defendant institutions by 22, thereby assigning each university an equal weight. Because there are 17 Defendant universities, this results in a collective market share of 77.3 percent (equal to  $17/22$ ).

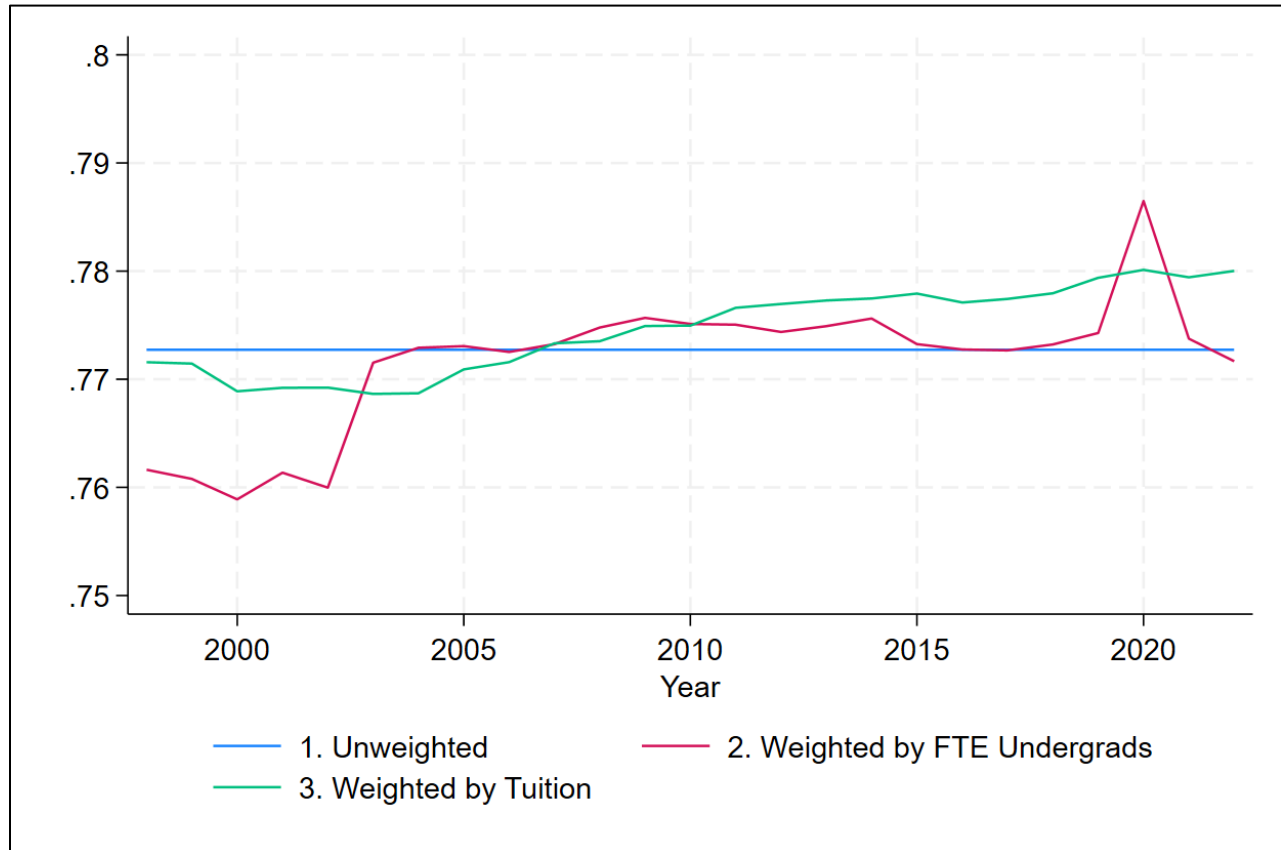
110. Second, I run the same calculation, this time weighting each university by its number

of full-time equivalent undergraduate students each academic year. Accounting for the relative size of each university's undergraduate population provides a measure of each institution's "unit" share in the market, with each unit corresponding to an enrolled student. This better reflects the fact that some Defendant universities, such as Caltech, enroll far fewer students than some of the non-Defendant Elite Private Universities, such as Harvard. Using this measure, I find that Defendants collectively account for between 77.2 to 78.6 percent of the market for Elite Private Universities on average over the 2003-2022 academic years, when weighted by undergraduates.

111. Third, I run the same calculation, this time using each university's undergraduate tuition to weight its share. Weighting by tuition allows me to account for the pricing differences across schools. I calculate that Defendants' average collective market share from 2003-2022 was 76.9 to 78.0 percent when weighting by undergraduate tuition.

112. Figure 1 shows all three measures of Defendants' collective market share of Elite Private Universities from 1998-2022. The measures are all bunched in the neighborhood of 77 percent over the Class Period.

FIGURE 1: DEFENDANTS' COLLECTIVE MARKET SHARE OF THE ELITE PRIVATE UNIVERSITY MARKET



Source: IPEDS Data; US News and World Report.

113. In Appendix 6, I provide a sensitivity analysis of the collective market share calculations that includes elite public universities that are consistently ranked in the top 25 USNWR. If the factfinder were to conclude that these public universities should be counted as part of the product market, Defendants still collectively possess a high market share of said market, with collective market shares ranging from 51 to 72 percent.

### 3. High Barriers to Entry Protect Defendants' Collective Market Power

#### a. *Elite Private Universities Are Substantively Different from Elite Liberal Arts Colleges*

114. The Elite Private University market is comprised of schools with large research budgets and prominent post-graduate programs.<sup>122</sup> Even the very best liberal arts colleges are poorly positioned to try to enter this market. For example, Dartmouth has stated that it:

also shares similar attributes with several of the nation's leading liberal arts colleges—in particular Amherst, Bowdoin, Middlebury, and Williams in terms of geographic location, size, and undergraduate focus. However, viewed through the admissions lens, Dartmouth has much less overlap with these institutions than it does with its university peers.<sup>123</sup>

Over the twenty-year Class Period none of the 221 schools with the Carnegie Classification of “Baccalaureate Colleges—Liberal Arts” switched its classification to that of a university. Indeed, the fact that USNWR ranks universities and liberal arts colleges separately is a further indicator of the barrier between universities and colleges.

#### b. *Elite Private Universities Have Larger Endowments Relative to Second-Tier Institutions*

115. The Elite Private University market has a substantial resource advantage in terms of endowments. Table 8 below shows the endowment level, and the endowment per student, for the 22 schools in the Elite Private University market.<sup>124</sup> The average endowment per student for the 22 schools in this market is \$975,195.

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122. All schools bar Dartmouth in this market have the Carnegie classification of “Doctoral/Research Universities—Extensive”. Dartmouth’s classification is “Doctoral/Research Universities—Intensive.”

123. DARTMOUTH\_0000093357.

124. Endowments at the start of the academic year averaged over the Class Period and deflated by the Consumer Price Index to 2024 dollars.

TABLE 8: ENDOWMENT COMPARISON

Elite Private Universities			Ten other highly ranked universities		
School	Endowment (\$'bil)	Endowment per student (\$'mil)	School	Endowment (\$'bil)	Endowment per student (\$'mil)
Brown	4.1	0.46	Brandeis	1.1	0.20
CalTech	2.9	1.29	Michigan	11.7	0.28
Chicago	8.8	0.63	Tufts	2.0	0.20
Columbia	11.3	0.47	UC Berkeley	1.9	0.05
Cornell	7.6	0.36	UCLA	2.0	0.05
Dartmouth	5.8	0.95	UNC	3.5	0.13
Duke	8.8	0.60	USC	5.7	0.16
Emory	8.9	0.70	Virginia	6.9	0.31
Georgetown	1.8	0.12	Wake Forest	1.6	0.22
Hopkins	4.9	0.29	William & Mary	0.8	0.11
MIT	16.5	1.52			
Northwestern	10.4	0.57	<b>Average</b>	3.7	0.17
Notre Dame	10.6	0.87			
Penn	12.3	0.54	<b>Overall Average</b>	9.5	0.72
Rice	6.8	1.14			
Vanderbilt	5.8	0.48			
Yale	31.3	2.60			
Carnegie	1.8	0.16			
Harvard	46.4	2.00			
Princeton	26.1	3.38			
Stanford	26.9	1.67			
Wash U	8.6	0.66			
<b>Average</b>	12.2	0.98			

116. Table 8 also shows endowment amounts for the ten highest USNWR-ranked universities outside the relevant market. The average endowment per student for these ten universities outside of the relevant market is \$169,730, substantially lower than for the relevant market. Indeed, there are only two schools in the relevant market, Georgetown and Carnegie Mellon,

with endowment per student amounts below the highest amount for the next ten universities outside the market. On average, these schools on the outside looking in would have to increase their endowments more than five-fold to match the endowment-per-student levels in the relevant market.

*c. Other Entry Barriers*

117. Star students and star faculty are attracted to Elite Private Universities. Recall from Table 5 and Table 7 above that the Elite Private University market is a unique draw for highly qualified students, as evidenced by revealed preference data and also the distance from home data. In addition, admit rates and yield rates show this market's distinct appeal. The average admit rate for schools in the Elite Private University market during the Class Period is 15.1 percent, considerably lower than the 28.3 percent average admit rate for the ten highly ranked universities outside this market.

118. Yield rates tell a similar story. The yield (that is, the fraction of admits that enroll) in the Elite Private University market during the Class Period averaged 52.1 percent, considerably higher than the 38.5 percent average yield rate for the ten highly ranked universities outside this market.

119. Mirroring student quality in the Elite Private University market is faculty quality. Consider first the highest of faculty qualities. The number of Nobel laureates among current and former faculty, per million students, at schools in the Elite Private University market is reported in the left side of Table 9 below. The average number of Nobel laureates per million students at a school in this market is 944. On the right side of Table 9 reports the count of Nobel laureates per million students at the ten highly ranked universities outside this market, which is on average 119.

TABLE 9: MEASURES OF FACULTY QUALITY

Elite Private Universities				Ten other highly ranked universities			
School	Nobel Laureates per million Students	Average Full Professor Salary	Fraction of Full Professors	School	Nobel Laureates per million Students	Average Full Professor Salary	Fraction of Full Professors
Brown	225	\$221,795	57%	Brandeis	191	\$181,569	46%
CalTech	9,036	\$246,850	84%	Michigan	24	\$207,417	49%
Chicago	1,342	\$289,344	54%	Tufts	97	\$183,779	39%
Columbia	741	\$270,044	65%	UC Berkeley	576	\$242,670	59%
Cornell	369	\$215,426	50%	UCLA	125	\$261,712	62%
Dartmouth	0	\$235,130	48%	UNC	77	\$185,490	45%
Duke	134	\$239,335	57%	USC	54	\$218,242	45%
Emory	0	\$213,386	47%	Virginia	45	\$212,622	42%
Georgetown	0	\$242,755	52%	Wake Forest	0	\$180,529	42%
Hopkins	0	\$212,195	48%	William & Mary	0	\$160,540	43%
MIT	2,120	\$280,203	63%				
Northwestern	163	\$250,466	52%	<b>Average</b>	119	\$203,457	47%
Notre Dame	0	\$222,236	47%				
Penn	221	\$273,198	57%				
Rice	322	\$236,782	57%				
Vanderbilt	83	\$227,635	45%				
Yale	658	\$279,565	65%				
Carnegie	174	\$198,929	45%				
Harvard	1,245	\$284,227	73%				
Princeton	2,194	\$289,472	62%				
Stanford	1,356	\$303,885	61%				
Wash U	381	\$238,030	52%				
<b>Average</b>	944	\$248,677	56%				

120. The difference remains pronounced when simply counting Nobel laureates, with no adjustment for school size. In the Elite Private University market the average number of Nobel laureates is 8.5, with 55 percent of these schools having at least three. For the ten highly ranked universities outside this market the average number of Nobel laureates is 3.4, with only 20 percent of these schools having at least three.



121. Table 9 also reports two other measures of faculty quality—the average full professor salary<sup>125</sup> and the fraction of all professors who are full professors. The average full professor salary in the Elite Private University market is \$248,677. This compares with an average of \$203,457 at the ten highly ranked universities outside this market. And the fraction of professors who are full professors is 56 percent in the relevant market, compared with 47 percent at the ten highly ranked universities outside this market.

122. The Elite Private University market is distinct in terms of faculty quality as defined by several different measures. Table 7 above showed substantial sorting of high-quality students into the Elite Private University market. This section has shown a similarly strong sorting of high-quality faculty.

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125. Averaged over 2016 to 2022 and deflated by the Consumer Price Index to 2024 dollars.

## II. THE CHALLENGED CONDUCT

123. In Part II.D below, through an economic lens, I analyze record evidence concerning the extent to which the Challenged Conduct is consistent with the allegations of conspiracy and inconsistent with unilateral conduct and unfettered competition in setting Effective Institutional Prices. This approach is common among economists, who frequently bring their expertise to bear in analyzing evidence of communications among alleged cartel members and other qualitative aspects of collusive behavior. I offer no opinion regarding whether the Challenged Conduct violated antitrust law.

124. In my opinion, the record evidence cited herein, when viewed through the criteria economists use to assess cartels, is consistent with Plaintiffs' allegation that Defendants engaged in the alleged conspiracy to suppress the institutional grant aid and to artificially inflate Effective Institutional Prices, and inconsistent with unfettered competition and unilateral conduct.

### A. The Alleged Overarching Agreement

125. The Challenged Conduct comprised two main elements. The first element concerned how to award institutional grant aid, and the second element concerned the sharing of competitively sensitive information to further the agreement on how to award institutional grant aid.

126. The first element comprised both the CM and the Core Principles. Defendants' purpose in establishing the CM was to achieve "a consistent formula of need analysis."<sup>126</sup> The CM was to establish a floor for EFCs: "What we are trying to eliminate is the downside adjustments that lead to real confusion."<sup>127</sup> Accordingly, if a 568 Group member did not implement the CM in full,

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126. VANDERBILT-00000528 at -529 (statement from 568 Group Technical Committee Chair to 568 Group Members about renewing the 568 exemption).

127. UCHICAGO\_0000183734 (statement from Chair of the Common Standards Subcommittee of the 568 Presidents Group); *see also* GTWNU\_0000009794.

members were expected to commit that the CM would be the “lowest” contribution expected of a family.<sup>128</sup> According to documents, Defendants did not want “competitive pressure”<sup>129</sup> and wanted to “avoid bidding wars.”<sup>130</sup> The objective was to “reduce the variance in need analysis results across institutions through consistent application of these common standards.”<sup>131</sup>

127. The second element, relating to the sharing of competitively sensitive information, concerned the 568 Group’s effort to understand how they were approaching and awarding institutional grant aid from year to year. This is consistent with, as a practical matter, an enforcement mechanism—if Defendants saw that some of them were not applying the CM and Core Principles so as to result in similar practices and policies, as reflected in the shared data, then they would see there was no point or utility in adhering to the Challenged Conduct.

128. It would have been important, as an economic matter, for Defendants to have agreement not just on the Core Principles, but also on at least many components of an IM, because otherwise the schools could all apply the principles while applying different methodologies generating different results. This was true because, as Dr. Baum acknowledges, at least most of the “precise number[s]” in the Base IM, with respect to percentages, “could be modified to some extent

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128. DARTMOUTH\_000035937 (an internal Dartmouth June 2004 memorandum summarizing a recent 568 Group meeting and explaining that to participate in the 568 Group, you did not have to agree to use the Consensus Methodology entirely, but institutions had to commit that the CA would be the “**lowest**” contribution that would be expected of a family) (emphasis in original); *see also* MIDDLEBURY01293 (document entitled “Summary of Presidents’ Section 568 Group Meetings” authored by a former Chair of the Technical Committee stating “[i]t has been understood that some 568 member institutions, for budgetary or other reasons, might decide not to fully implement all of the specific agreements, but not so as to result in lower expected contributions than the agreements.”); Emory\_568Lit\_0000577 (568 Technical Committee making changes to income bands optional, “consistent with [its] policy of making across-the-board revisions only if PCs are increased”).

129. MITLIT-000078586 at -78591.

130. DARTMOUTH\_0000359527.

131. GTWNU\_0000012456.

without violating the basic principles.”<sup>132</sup> This reflects “the reality that reasonable and thoughtful people will always disagree on the precise components of a need analysis system.”<sup>133</sup>

129. Notre Dame is illustrative. In 2008, Notre Dame stated: “[U]nilateral changes to need analysis are inconsistent with the purpose and spirit of the 568 Group.”<sup>134</sup> In 2020, Notre Dame implemented changes to its IM because of changes to the CM: “We also will talk about other changes that we will be making in our approaches to needs analysis because of the overall methodology change.”<sup>135</sup> In 2021, in discussing the 568 exemption, Notre Dame stated internally: “Without the Section 568 antitrust exemption, schools will also likely depart from Consensus Approach which ensures that all member schools are utilizing the best practices same approach to a consensus need analysis formula to arrive at similarly family contributions thus eliminating finances from the equation when a prospective student is considering several 568 Schools for matriculation.”<sup>136</sup>

130. In August 2014, as another example, Vanderbilt’s Vice Provost for University Affairs (overseeing admissions and enrollment management) described how the 568 exemption allowed Defendants to avoid competition: “This discussion allows for a common approach, so a family’s expected family contribution does not vary to any great extent from school to school. *It helps to avoid bidding wars between schools*, so families can focus on other aspects of selecting on other aspects of selecting an institution; not focusing on the lowest net price.”<sup>137</sup>

131. In documents contemporaneous to the founding and initial implementation of the Challenged Conduct, Defendants repeatedly describe the 568 Group’s purposes and goals as

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132. Baum 197:8-21.

133. Baum 200:19-201:16; Baum Ex. 2 at 50.

134. ND\_0006794.

135. ND\_0088625.

136. ND\_0162636.

137. VANDERBILT-00047310 (emphasis added).

reflecting “agreement” among the members.<sup>138</sup> In the years that immediately followed, moreover, Defendants discussed the goal of “agreement” and “consensus” and of the need for and importance of “following” the Consensus Approach.<sup>139</sup>

132. In October 2000, for example, the “Common Standards Subcommittee to the 568 Presidents’ Working Group” submitted the first full draft of what would become the CM, reflecting the 568 Group’s core agreements as to the need principles, to use the CB IM, to make need-based aid the primary way to award aid, and to focus on fairness and equity in providing aid. The original drafters of what would be the CM reached “broad consensus” on not only “need analysis and professional judgment” but also the need and way to ensure “future work and maintenance of the Consensus Methodology.”<sup>140</sup> The drafters stated that the CM would “eliminate much of the variance in needs analysis that has been experienced in recent years.”<sup>141</sup> The drafters agreed to use the Base IM as the “Starting point.”<sup>142</sup> And thus they focused coming to an agreement on aspects of the IM that required the exercise of professional judgment.<sup>143</sup>

133. The formation of the alleged Overarching Agreement was under the 568 exemption, for which Defendants (and others) had lobbied, which permitted competing schools “to agree” on matters, including “to award financial aid only on the basis of need” and “to use common principles of analysis for determining need.”<sup>144</sup> During discussions of the first opportunity to renew the 568

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138. CORNELL\_LIT0000002448.

139. GTWNU\_0000029337 at -338; GTWNU\_0000023917; BROWN\_0000020366 at -371, -373; Columbia\_00058566 at -569.

140. COFHE-02-00002782 at -784.

141. *Id.* at -2785. This belief persisted beyond the founders. *See, e.g.*, CBP004681 (October 2018 meeting notes reflecting several attendees’ belief that without the 568 exemption, there would be more variance in aid).

142. *Id.* at -789.

143. *Id.*

144. 15 U.S.C. § 1, note.

exemption, for example, Defendants believed internally that “[e]xpiration of the antitrust exemption would block the implementation of the consensus methodology.”<sup>145</sup>

134. Similarly, in April 1999, founding members from Duke, Cornell, and MIT were part of a working group that stated that the 568 exemption “shelter[s] much of the collaboration needed to develop and maintain a set of need-analysis principles upon which any need-based aid system must be based. The legislation specifically protects need-blind institutions’ efforts to develop and use common principles of analysis for determining need.”<sup>146</sup> Defendants regularly compared the 568 Group to the Overlap Group.<sup>147</sup>

135. The Challenged Conduct includes a Memorandum of Understanding (“MOU”) that a school in the 568 Group signed upon joining and would periodically sign in reaffirming its participation in the 568 Group. A 2002 email attaching an early draft of the MOU explained that “the time has come for institutions to make a more concrete commitment now that implementation is at hand.”<sup>148</sup> The MOU stated, as of December 2003: “The undersigned institution agrees to participate in the collaborative work of the 568 Presidents’ Group under the following guidelines.”<sup>149</sup> The MOU then stated that the “purposes of the Group” include:

1. Maintain financial aid policies and procedures that are designed to bring greater clarity, simplicity, and fairness to the process of assessing each family’s ability to pay for college”;
- “2. Discuss and agree upon common principles of analysis for determining the financial need of undergraduate financial aid applicants”; and
- “3. Build, maintain, and revise, as appropriate, a Consensus Approach need analysis methodology that is consistent with these principles.”<sup>150</sup>

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145. DUKE568\_0155589 at 613; *see also* Columbia\_00058983 (President DeGioia remarking that 568 exemption was “fundamental to the group’s ability to . . . agree upon a need-based financial aid system”).

146. COFHE-02-00009006 at -013.

147. DUKE568\_0155518.

148. CORNELL\_LIT0000378031.

149. CORNELL\_LIT0000002448.

150. *Id.*

This same language appeared in the MOUs from 2006, 2008, 2011, 2012, 2016, 2017, 2019, 2020, and 2021.<sup>151</sup>

136. With respect to “Organization,” moreover, the MOU stated:

The presidents of the participating institutions shall appoint a Steering Committee consisting of at least three presidents, one of whom shall serve as Chairperson. Each participating institution shall also designate an individual to represent the institution on a Need Analysis Council and members of that Council shall in turn elect a Chairperson from amongst its members to serve as Chairperson of the technical Committee and to preside at meetings of the Council. The Technical Committee will serve as the coordinating and policy review body of the Need Analysis Council, reporting on behalf of the Council to the presidents of the 568 Group. Members of the Technical Committee shall be drawn from the Need Analysis Council. Working subcommittees may be appointed, as needed, from time to time.<sup>152</sup>

This same language also appeared in the MOUs from 2006, 2008, 2011, 2012, 2016, 2017, 2019, 2020, and 2021.<sup>153</sup>

137. The December 2003 MOU, moreover, also cited as one of the “purposes of the Group” the following: “Explore ways of developing a data exchange program as permitted by the MIT Settlement Standards of Conduct.”<sup>154</sup> (I take no position on whether the referenced “Standards of Conduct” in fact remained in place throughout the maintenance of the 568 Group.) This same language appeared in the MOUs from 2006, 2008, 2011, 2012, 2016, 2017, and 2019.<sup>155</sup>

# **1. The Initial Activities and Formal Announcement of the 568 Group**

138. The “568 Presidents’ Working Group,” the nascent version of the 568 Group, was formed in approximately 1995, to take advantage of the recently enacted 568 exemption, by reaching

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151. BROWN\_0000078665; COFHE-02-00002875; COFHE-02-00002726; COFHE-02-00002888; Columbia\_00122250; YALE\_LIT\_0000020245; CALTECH000000214; Columbia\_00003778; GTWNU\_0000293793.

152. *Id.*

153. *Id.*

154. CORNELL\_LIT0000002448.

155. BROWN\_0000078665; COFHE-02-00002875; COFHE-02-00002726; COFHE-02-00002888; Columbia\_00122250; YALE\_LIT\_0000020245; CALTECH000000214.

agreement on common principles for awarding institutional grant aid and on a methodology distributing need-based aid.

139. In 1999, Duke's then-Director of Financial Aid, Mr. Belvin, began serving as the Chair of the Common Standards Subcommittee of the 568 Presidents Group. He oversaw the drafting and distribution of the Report of the Common Standards Subcommittee to the 568 Presidents' Working Group, dated October 31, 2000.<sup>156</sup>

140. The 568 Group formally announced itself in a July 2001 press release, which stated that "the presidents of 28 leading colleges and universities today (July 6) reaffirmed their commitment to provide financial aid based on financial need and endorsed a comprehensive set of principles for the fair determination of a family's contribution to the cost of securing an undergraduate education. The most fundamental of these principles is that financial need should be the principal determinant of institutional aid awards."<sup>157</sup>

141. The press release further stated that the presidents "also agreed to the continued development of a new 'Consensus Approach to Need Analysis' for use by campus financial aid officials in determining student eligibility for financial aid"; that the presidents "share a belief in the primacy of need-based financial aid"; that the group had endorsed the principles discussed further below and "further revisions to the Institutional Methodology (IM)"; that the "Consensus Approach" would include "common elements of need analysis and professional judgment"; and that "an oversight group to review and modify the methodology as needed over time."<sup>158</sup>

142. As of approximately 2002, as the Chairman of the 568 Group Common Standards Subcommittee, Mr. Belvin stated that each 568 Group member school had made a commitment to

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156. GTWNU\_0000324226 at -228.

157. PRINCETON000024.

158. *Id.*



the main principles of the 568 Group, discussed below, and to implementing the CM. He introduced the CM with the language that “[w]ith respect to determining financial need, participating institutions agree to” implement the methodology outlined in the memorandum.<sup>159</sup> As Mr. Belvin expressed in the October 31, 2000, 568 Group meeting, the CM was to set “bottom line policies that, with the exception of professional judgment application, establish a minimum contribution” to be paid by families.<sup>160</sup> Schools could make exceptions “locally,” but this should only be done “exceptionally.”<sup>161</sup>

143. In the spring of 2003, Mr. Belvin distributed a memorandum to the “Consensus Approach Methodology Financial Aid Directors,” explaining that each aid director would be “responsible for” doing the following: “implementing the currently agreed upon Consensus Approach need analysis methodology on your campus; participating in continuing discussions designed to build, maintain and revise, as appropriate, the Consensus Approach methodology; preparing and analyzing such data as the 568 Group, with the advice of legal counsel, may deem appropriate.”<sup>162</sup>

144. The memorandum reiterated: “Implicit in this understanding is the responsibility of each financial aid officer to implement the Consensus Approach (CA) methodology on his or her campus.”<sup>163</sup> The “Consensus Approach” “includes guidelines for Professional Judgment (PJ) designed to assist aid officers in dealing with special circumstances that vary from the norm.”<sup>164</sup> Including “PJ” within the CA was meant to further the goal of reducing variations in awards:

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159. CORNELL\_LIT0000303597.

160. PRINCETON000066.

161. COFHE-02-00012068.

162. CORNELL\_LIT0000303597. The corresponding schools are identified at -609 and -612.

163. *Id.*

164. *Id.*

“Although PJ, locally applied, is a critical element of this approach, the goal of consistent results requires that variations from CA, beyond those detailed in these guidelines, should be the exception, rather than the rule.”<sup>165</sup>

145. The “core need analysis elements” of the CA included, in addition to the very specific listing of individual components of the methodology, that “participating institutions agree to use CSS Institutional Methodology (IM) as the base calculation”<sup>166</sup> and to “use Professional Judgment only on a case-by-case basis, consulting the guidelines provided within CA”<sup>167</sup> Mr. Belvin stated: “Implementation of the Consensus Approach begins with the cohort of students applying to enter college in the fall of 2003.”<sup>168</sup>

146. Mr. Belvin’s summary thus reiterated the explanation of Cornell’s Director of Financial Aid, in November 2002, that the 568 Group was about “agreement” regarding the CA: “Agreement to follow this need analysis approach is limited to following the formula for parent and student contribution results.”<sup>169</sup> The question of the “packaging of aid” was a separate matter in this sense: “There cannot be agreement ahead of time on the combination of work, loan, and grants in student packages.”<sup>170</sup>

147. In addition, documents reflect that 568 Group member schools agreed that a given member would be allowed to deviate from the methodology and make global changes to its financial aid awarding policies that systematically deviated from the methodology so long as any such changes increased family contributions.<sup>171</sup> In line with those earlier explanation, in a December 2008

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165. *Id.*

166. *Id.*

167. *Id.* at -598.

168. *Id.*

169. *Id.* at -608.

170. *Id.*

171. Emory\_568Lit\_000057.

discussion among the members of the 568 Group Technical Committee, a key architect of the 568 Group explained that the CM “established a ‘floor’ approach that could be breeched only in cases involving locally applied individual case based professional judgment.”<sup>172</sup> An internal email by MIT’s head of Student Financial Services in 2014 explained her understanding that “[a]n institution can be part of the 568 Group and be more stringent in how it defines financial need, but not more generous.”<sup>173</sup>

148. The first element of the Challenged Conduct, noted above, comprised agreement on (1) six Core Principles of awarding institutional grant aid; (2) making need-based aid the primary form of institutional grant aid; (3) using the Base IM as the starting point for setting awards of institutional grant aid; (4) developing and implementing the CM as a variation for the IM for purposes of need analysis; (5) using a common manual for applying Professional Judgment, with it to be the exception, rather than the rule; and (6) sharing competitively sensitive information relating to institutional grant aid. I address these in turn below.

## **2. Consensus on Six Core Principles**

149. The 568 Group created “Consensus Methodology Policy Guidelines” setting forth the following agreed-upon Core Principles for awarding institutional grant aid:

1. To the extent they are able, parents and students have the primary responsibility to contribute to educational expenses before an institution awards financial aid.
2. Families should contribute to educational expenses according to their ability. Those with similar financial profiles should contribute similar amounts.
3. Institutions should evaluate both income and assets as part of the assessment of parents’ and applicants’ ability to pay.
4. Each institution should inform applicants about the policies and practices it applies when measuring a family’s ability to pay, carry out its policies consistently throughout a student’s eligibility, and support the awarding of need-based aid.

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172. BROWN\_0000015617.

173. MITLIT-000074274.

5. An institution that allocates any financial assistance that is not based exclusively on need should inform all prospective applicants of the standards it applies in allocating that aid.

6. The exercise of “professional judgment” by financial aid officers in assessing a family’s ability to pay should recognize unique or extenuating financial circumstances in individual cases; such professional judgment is not the proper mechanism for systematically treating 568 Groups of students differently in order to advance institutional objectives.<sup>174</sup>

150. Principles one through four and principle six are based on the ability to pay. The second principle is also based on horizontal equity. Horizontal equity is the principle that families of similar socioeconomic backgrounds should pay similar prices, while vertical equity is the principle that families with greater ability to pay should pay higher prices. The fourth principle is also based on the primacy of need-based aid. These six Core Principles thus collectively reflect what I call, for ease of reference, the “affordability principle.” Georgetown President John DeGioia, and former chair of the 568 Group, captured the affordability principle in explaining how the 568 exemption permits the 568 Group to use the CM: “What it enables us to do is develop a common formula by which we would assess the need of the student. We ask the family to contribute the *maximum* that they are capable of, according to that formula.”<sup>175</sup>

***a. Consensus on the Primacy of Need-Based Aid***

151. As to the first principle, to say that parents and students have the “primary responsibility” to pay what they can afford to pay is to say that schools should be awarding aid in line with that premise. Awarding merit aid is not in line with the first principle, as “extensive reliance on merit aid would be inconsistent with families paying the amount that they can afford to pay.”<sup>176</sup>

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174. Penn-LIT-00162887 (“The Presidents’ Group Consensus Methodology Policy Guidelines December 2016”).

175. Connor Jones, *On the Record with President DeGioia*, THE GEORGETOWN VOICE (Mar. 6, 2014), <https://georgetownvoice.com/2014/03/06/record-president-degioia/> (emphasis added).

176. Baum 215:7-13; Baum Ex. 15 at 2.

***b. Consensus on Primacy of Need-Based Aid***

152. As to the second principle, a school can achieve horizontal equity based on ability to pay only if it is primarily awarding institutional grant aid based on need. Awarding merit aid is not in line with the second principle. The fourth principle refers to each school's agreement to "support the awarding of need-based aid." The fifth principle presupposes a default setting in which aid is based exclusively on need.

***c. Consensus on Use of the Base IM***

153. Under the Challenged Conduct, Defendants agreed to use the Base IM in two main respects. One, they would "use CSS Institutional Methodology (IM) as the base calculation" of student and family ability to pay, or the "starting point" for the subsequent exercise of professional judgment.<sup>177</sup> Two, Defendants would develop the CM by modifying the Base IM.

154. Duke's Director of Financial Aid, for example, explained that the 568 Group used the Base IM as a starting point.<sup>178</sup> He further explained that after the 568 Group developed the initial version of the CM, as of 2002, it sought to work with the College Board through FASSAC to implement options to allow the Defendants to apply the components of the CM through the College Board's Institutional Need Analysis Software ("INAS").<sup>179</sup>

155. With only one or two exceptions, throughout the Class Period, Defendants used an IM whose components overlapped heavily with the components of the Base IM, rather than use a "homegrown" IM divorced from the Base IM. In addition, as discussed further below, Defendants developed the CM by repeatedly modifying the Base IM—and, as also discussed further below, by working with the College Board to modify the Base IM itself. In participating as a member of the

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177. CORNELL\_LIT0000412967 at -971.

178. COFHE-02-00025815.

179. COFHE-02-00012068.

College Board, a school did not “agree” to use the CSS Profile or Base IM, and the College Board was imposing no requirement that the school do so.<sup>180</sup>

*d. Consensus on Development and Implementation of the CM*

156. Defendants developed the CM by periodically modifying its components from the Base IM. That is, as one Defendant explained, “CA is not a different methodology (than IM), it’s just an enhanced version. CA is basically IM with tweaks.”<sup>181</sup> The 568 Group’s Technical Committee was responsible for proposing and implementing changes, reflected in the “Consensus Methodology Policy Guidelines” regularly distributed—at least every other year—to the Defendants.<sup>182</sup>

157. Defendants regularly described themselves as following the CA and CM. In response to inquiries from Congress, for example, Cornell explained that it was applying the CM.<sup>183</sup> The internal documents of other Defendants further reflect their efforts to hew to the CM. Duke used what it called the “568 rule set” in its “global options” in its IM software.<sup>184</sup> In June 2011, Penn acknowledged “the agreement to use the consensus approach” and “the agreement to abide by the CA.”<sup>185</sup> Penn later hired a prestigious consulting firm to assess their financial aid practices, and the firm concluded as part of its analysis that the school was applying the CM.<sup>186</sup> In a February 2017

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180. Meade 12:10-19.

181. GTWNU\_0000292229.

182. Columbia\_00184489 at -510. (“In support of this effort, the Need Analysis Council shall appoint a Technical Committee responsible for managing and, where appropriate, updating the Consensus Approach.”); *see also, e.g.*, CORNELL\_LIT0000273249 (Cornell’s Director of Financial Aid being asked by technical committee to approve updated manual).

183. CORNELL\_LIT0000100841 (In 2008, Cornell told Congress it determines a “family’s contribution toward educational costs . . . by using the 568 Presidents’ Group Consensus Approach methodology”).

184. DUKE568\_0000902 at -919; DUKE568\_0152811; DUKE568\_0026368; DUKE\_00255500.

185. BROWN\_0000017721.

186. Varas 150:14-20.

document, Penn observed: “Decisions were made to keep Penn aligned with the 568 Presidents’ Group Consensus Methodology.”<sup>187</sup>

158. There are many further examples. In 2002, Cornell explained to its Executive Budget Group that “Cornell University, along with 28 colleague institutions, will implement a uniform approach to financial aid need analysis this year, called the Consensus Approach (CA). The CA is the result of 2 years of work by the presidents and the directors of financial aid of those institutions. The approach resulted in a new agreement on the treatment of designated need analysis data elements, new agreements on income tax return collection, and new agreements on professional judgment standards.”<sup>188</sup> In 2007, Cornell’s described the family contribution as being “determined by the ‘Consensus Approach,’ a model that is used by a range of private colleges and universities, including Columbia, Dartmouth, Duke, Northwestern, Chicago, and Yale.”<sup>189</sup>

159. Defendants continued to work with and through the College Board to further their alleged agreement to modify the CM using the Base IM. Defendants did this (a) by making recommendations about and suggesting changes to the Base IM itself and (b) by having Group members serve on the College Board and its relevant committees tasked with making changes to the Base IM.<sup>190</sup> The 568 Group regularly researched and then made specific recommendations to the College Board for purposes of changing components of the Base IM. As Cornell explained in a 2022 email, “568 guidance/recommendations are definitely rolled into IM and IM with options, so it is

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187. PENN568-LIT-00016120.

188. CORNELL\_LIT0000101721 at -773.

189. CORNELL\_LIT0000102974 at -000.

190. PENN568-LIT-00029001 (“My recollection is that the tables were developed by a FASSAC subcommittee which included some 568 cross-representation”); AMHE-00012771 at -783 (“Strong feeders for FASSAC have been identified as: . . . The 568 Group.”); COFHE-02-00011341 at -343 (“The GAO also discovered that many of the 568 Group recommendations for methodological revisions that better serve students and parents had been adopted by the College Board as well as by individual institutions.”).

hard to define what is 568 vs what is IM. In some cases the 568 recommendation is to use IM, in other cases the 568 recommendation became IM.”<sup>191</sup>

*e. Consensus on Guidelines for Professional Judgment*

160. The 568 Group’s alleged agreement to use professional judgment where appropriate was part of the Challenged Conduct. The 568 Group regularly updated and distributed the Professional Judgment Guidelines, or Manual, to Defendants. One of the points of the Guidelines was to permit the schools to exercise discretion in unusual cases without varying substantially from the “floor” calculations under the CM.<sup>192</sup> One founding member explained that “variations from CA, beyond those detailed in the guidelines, should be the exception, rather than the rule.”<sup>193</sup>

161. Such limits on the exercise of professional judgment were evidently part of the Core Principle that “professional judgment is not the proper mechanism for *systematically* treating 568 Group students differently in order to advance institutional objectives.”<sup>194</sup> A further point of the Guidelines was to maximize the extent to which the exercise of discretion occurred with some range of judgment that the Guidelines deemed reasonable. Notre Dame’s Director of Financial Aid, for example, was not aware of any differences between the Notre Dame manual for Professional Judgment and the 568 Manual for Professional Judgment.<sup>195</sup>

162. Concurrent with early drafts of the CM, the 568 Group published a 32-page “Professional Judgment Guidelines Manual.”<sup>196</sup> The “Rationale” for the document was that “having a consensus on policy and procedure for calculating parental support will reduce significant

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191. CORNELL\_LIT0000112401.

192. DUKE568\_0000027 (2016 Professional Judgment Guidelines Manual); MITLIT-000073811 (2015 Professional Judgment Guidelines Manual); AMHE-00004085 (2014 Professional Judgment Guidelines Manual); COFHE-02-00003131 (2004-05 Professional Judgment Guidelines Manual).

193. GTWNU\_0000347907 at -914.

194. See PENN568-LIT-00162887 at -888.

195. Nucciarone 112:5-113:24.

196. BROWN\_0000000386.



variances in measuring need among institutions.”<sup>197</sup> As to “Divorced/Separated/Single Parent,” for example, the Guidelines “would serve as a basic standard for all 568 schools.”<sup>198</sup> Similarly, the guidelines address the “CA/FM Conundrum,” where the IM EFC is lower than the FM EFC. Under that topic the Guidelines again state that the “568 Group seeks to create, to the extent practicable, reasonably consistent family contributions” and that the “application of the Consensus approach throughout our Group, local professional judgment considered, will help to ensure this result.”<sup>199</sup> These Guidelines are evidence of the 568 Group’s focus on “ability to pay, not willingness.”<sup>200</sup>

*f. Consensus on Sharing Competitively Sensitive Information*

163. The 568 Group’s periodic MOUs, as noted above, cited as one of the “purposes of the Group” the following: “Explore ways of developing a data exchange program as permitted by the MIT Settlement Standards of Conduct.”<sup>201</sup>

164. The 568 Group’s Needs Analysis Council frequently asked the member schools to answer, and the schools did answer, detailed survey questions regarding their financial aid policies and practices—including their application of the Core Principles and the components of the CM. Such surveys, which I address further below, allowed the 568 schools to understand that they were all applying almost all of the Core Principles and most of the components of the CM.

165. Defendants shared competitively sensitive information through their overlapping membership in, most prominently, the Consortium on Financing Higher Education (“COFHE”). MIT’s website describes COFHE as “an unincorporated, voluntary, institutionally-supported

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197. *Id.* -388; *see also* DARTMOUTH\_0000359371 at -512 (noting internally to Dartmouth colleagues that a professional judgment manual would address the “very issues that cause institutions to differ widely in their need analyses”).

198. BROWN\_0000000386 at -392.

199. *Id.* at -393.

200. *Id.* at -388.

201. CORNELL\_LIT0000002448.

organization of thirty-nine highly selective, private liberal arts colleges and universities” with home offices on the Defendant MIT’s campus.<sup>202</sup> COFHE’s former Director of Research has described its purpose as “Rebuilding the ‘overlap’ knowledge base.”<sup>203</sup> COFHE holds financial aid retreats every other year and has “assembly” members on campus to convey information to “senior leaders.”<sup>204</sup>

166. COFHE members shared extensive data with each other from year to year, in what are called “colorbooks.” They were called colorbooks because the cover of the compilations of data were different colors for different subject matter—brown for Sources of Undergraduate Grant Aid, yellow for Tuition, Student Budgets, and Self-Help, red for Admissions Statistics, and blue for Freshman Financial Aid and Admissions Survey.<sup>205</sup> And Notre Dame, who was not even a member of COFHE, nevertheless received the colorbooks through a connection within the 568 Group.<sup>206</sup>

167. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED],<sup>207</sup> and the colorbooks enabled apples-to-apples comparisons with uniform data definitions and organized and analyzed such data within a single document and examined trends. As I discuss further below, much of the data in the colorbooks were available to COFHE members before the

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202. The MIT website (<https://web.mit.edu/cofhe/>) states: “The Consortium’s data collection, research, and policy analysis focus on matters pertaining to access, affordability, and assessment, particularly as they relate to undergraduate education, admissions, financial aid, and the financing of higher education.” The MIT website also includes the following statement: “The small size of COFHE has long facilitated productive in-person meetings and information-sharing.” <https://web.mit.edu/cofhe/faq.html>.

203. DUKE568\_0077086.

204. Tilton 220:6-7.

205. YALE\_LIT\_0000124870 at -873.

206. ND\_0004710.

207. See, e.g., Arleth 123:6-124:33, 124:24-125:3, 125:16-10.

data were publicly available. The Yellowbook itself stated, moreover, that the data therein was *not* publicly available.<sup>208</sup>

168. The Bluebook is based on unit-specific data collected from each COFHE member. COFHE receives from each of its members competitively sensitive information about the school's financial aid practices, including details about "Parent Contribution" and "Net Price" broken down by groupings of the family's income.<sup>209</sup> The printed version of the Bluebook presents some of its data in aggregated form, but several tables and charts are broken down by unit, each of which is separately identified by a letter (*e.g.*, U for "university") and a number (*e.g.*, C1, I1, U1). The data include non-public information about each Defendant's most recent financial aid practices, including its most recent calculations of EFC and PC.<sup>210</sup> The data is updated in supplements published semi-annually and maintained on a website through which only COFHE members can access and monitor such data.<sup>211</sup> [REDACTED]

[REDACTED]<sup>212</sup>

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208. *See, e.g.*, Columbia\_00001575 at -567 (a 68-page doc titled "Tuition, Student Budgets, and Self-Help at the Consortium Institutions for Academic Year 2010-2011, Consortium on Financing Higher Education – August, 2010"), which states "Confidential and Proprietary Information. This document contains information supplied by the Consortium on Financing Higher Education by its members for their use."

209. *See* Columbia\_00277826 (a 55-page document titled "Freshman Financial Aid/Admissions Survey – Class of 2017 – Entering 2013 – (Bluebook XXIX) – Consortium on Financing Higher Education – February 2014"). Pages 5-6 state that "*Bluebook* tracks a wide variety of statistics related to financial aid and admissions..." that concern, *inter alia*, matriculants receiving aid, the net price faced by aided students, parent contributions, average net prices, and family incomes. Pages 9-10 state that "This [Bluebook] includes data provided by the financial aid and admissions offices of the 31 COFHE members and five additional institutions that have traditionally participated in this study. . . Using unit data, COFHE calculated the counts, means, and other statistics usually reported in *Bluebook*. These figures were then returned to each institution – along with the logic used to calculate them – for review and sign-off."

210. *See, e.g.*, VANDERBILT-00041631 (a 65-page document titled "Freshman Financial Aid/Admissions Survey – Class of 2019 – Entering 2015 – (Bluebook XXXI) – Consortium on Financing Higher Education – February 2016"), page 41, Table 6 (titled "Budgets, Awards and Contributions for Matriculants on Need-Based Aid – Class of 2019 – Entering 2015"), which contains school-level data regarding average financial aid awards and average parent and family contributions.

211. BROWN\_0000022067 (bluebook published in January and bluebook supplement posted in March); DUKE568\_0095634 at -647, -650.

212. Rapelye 177:2-178:12.

169. The 568 Group’s participation in COFHE in this way was reflected in how the two groups (the 568 Group and COFHE) shared resources. In particular, COFHE’s longtime Director of Public Issues, Megan Arleth, frequently served as the coordinator of 568 Group meetings.<sup>213</sup> COFHE employees Ted Bracken and Sydney Earle regularly played a similar role. MIT and Johns Hopkins made their facilities available for both COFHE and the 568 Group to use. In fact, MIT (a longtime 568 school) and JHU (a guest member of the 568 Group since 2017, and a formal member beginning in 2021) hosted COFHE’s research staff.<sup>214</sup> COFHE would “keep” the 568 Group documents.<sup>215</sup> The COFHE Assembly, COFHE’s governing body, which consists of representatives from every COFHE institution, includes dozens of 568 Group schools.<sup>216</sup>

170. The colorbooks contained compiled and analyzed data to help the Defendants understand where they stood relative to their peer schools and to adjust their policies and practices accordingly. COFHE understood that schools used the colorbook data to make adjustments to their policies: “How do people use the color books? Make adjustments on self-help levels based on comparisons.”<sup>217</sup> A 2011 draft COFHE Policy Statement explained that “unit record data that COFHE members are providing represent a transformative period in data analysis for the Consortium, with [t]he Admission’s Supplement, for example, allow[ing] member institutions to view their own cross applicant/admission and match/miss results with respect to each of the other 30 schools,” while “[t]he Financial Aid Supplement, similarly, extends the reach of unit-record data to enable comparison of average grants by income group across groups of member institutions.”<sup>218</sup>

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213. Arleth 13:11-19, 19:9-15.

214. *Id.* 155:1-11 (Bracken was Arleth’s predecessor at COFHE); BROWN\_0000014901 (referring to S. Earle); Rapelye 17:6-10 (“We started at Dartmouth, and then moved – the actual offices moved to MIT in the 1970s. And we’ve also had an office in Washington, D.C., that has been part of Johns Hopkins.”).

215. See CALTECH000000812.

216. DARTMOUTH\_0000141869 at -884-886.

217. BROWN\_0000254354.

218. CORNELL\_LIT0000038218.

171. Defendants regarded the colorbooks as important, even critical, in comparing themselves to their peers and adjusting their own policies and practices accordingly. As Vanderbilt acknowledged in a June 2016 email to COFHE Director of Research Stephen D. Minicucci: “We have been spending time examining our own awarding practices as well as understanding our competitors. Thanks to COFHE we are able to benchmark ourselves in this area.”<sup>219</sup> Notre Dame, which was not even a COFHE member but which received the colorbooks on the side, acknowledged that “the current ability to secure the COFHE books is connected to our 568 participation and the leadership of the 568 Group.”<sup>220</sup>

172. With respect to the Redbook, for example, COFHE has explained that it “includes several indicators that allow users to chart time comparing individual institutions to each other and to institutional groups”<sup>221</sup>, and Georgetown said that using the data, it “could choose . . . to take a look at Duke, Penn, and Brown” and “then . . . could look [at] about how Georgetown compares to those three.”<sup>222</sup> In March 2012, as another example, Emory commented internally that through his involvement with the 568 Group, Dean Bentley, as Executive Director of Financial Aid, “has been able to have insider knowledge of the plans and practices related to financial aid and need blind admission. This insider knowledge, along with the attractive positioning for Emory University—by being involved in this elite group—were both strong benefits of the 568 Group.”<sup>223</sup>

173. The metrics in the colorbooks were of competitive value to the Defendants in several ways. A first example is the Yellowbook data revealing the extent to which Defendants were using

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219. VANDERBILT-00303077.

220. ND\_0004696.

221. GTWNU\_0000058515.

222. Costanzi 270:20-272:5.

223. Emory\_568Lit\_0026024.

their endowments to fund their institutional grant aid.<sup>224</sup> This metric allowed the 568 Group member schools not to face allegations of underspending on such aid out of their endowments. This metric also allowed Defendants to know and assure that they were not overspending as well, risking the ire of their fellow 568 Group schools. In other words, the sharing of data on endowment funding of institutional grant aid would have facilitated 568 Group schools staying broadly within the range of their principal competitors.

174. A second example is the Yellowbook data revealing the extent to which the COFHE and Defendants were using self-help as part of their packaging.<sup>225</sup> This metric allowed competing schools not to face allegations of unfair packaging—that is, as long as they were packaging loans with grants to a similar extent as their peers, they would appear to be competitive in that regard. At the same time, knowing where their peers stood on this metric has the effect of discouraging individual 568 Group schools from reducing self-help.

175. A third example is the data in the Bluebooks revealing how much institutional grant aid the schools were awarding to undergraduates and the percentage receiving such aid.<sup>226</sup> These metrics allowed competing schools not to face allegations of underspending or misplaced spending

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224. See, e.g., Columbia\_00279756 at 768 (a 35-page document titled “Sources of Undergraduate Grant Aid at the COFHE Institutions – 2014-2015 – Consortium of Financing Higher Education – March 2016”), Brownbook Table 1 (titled “Sources of Undergraduate Grant Aid (\$000’s”).

225. See, e.g., CALTECH000042379 (a 67-page document titled “Tuition, Student Budgets, and Self-Help at the Consortium Institutions for Academic Year 2017-18 – Consortium of Financing Higher Education – July 2017”), at CALTECH000042395; CALTECH000042401 (titled “Section II. Self-Help Expectations for Academic Year 2018”); CALTECH000042420 (Table 7, titled “Self-Help Expectations For First-Year Students”); CALTECH000042421 (Table 8, titled “Self-help Expectations for Financial Aid Students By Year 2017- 2018”); CALTECH000042422 (Table 9, titled “Ratio of Average Self-Help to Tuition, Fees, Room and Board”); CALTECH000042423 (Table 10, “Description of Differential Self-Help Packages”); CALTECH000042424 (Table 11, titled “Description of Preferential Self-Help Packages”); and CALTECH000042425 (Table 12, titled “Other Comments on Self-Help Packages”).

226. See, for example, Columbia\_00243267 at -286 (a 56-page document titled “Freshman Financial Aid/Admissions Survey – Class of 2018 – Entering 2014 – (Bluebook XXX) – Consortium on Financing Higher Education – February 2015”), at Table 4 (titled “Matriculants and Matriculants on Aid – Class of 2018 – Entering 2014”), and at -294 (Table 6, titled “Budgets, Awards and Contributions for Matriculants on Need-Based Aid – Class of 2018 – Entering 2014”).

on such aid in general—that is, as long as they were spending on such aid to a similar extent to a similar number of students, then they would appear to be competitive in that regard.

### **3. The 568 Group's Activities Within the Challenged Conduct**

176. The 568 Group engaged in regular and extensive activities throughout the Class Period, including (a) organizing and holding regular in-person conferences, (b) regularly analyzing and updating its assessment of needs-analysis practices through the Technical Committee, (c) facilitating information-gathering and dissemination to 568 Group schools about such practices, and (d) drafting and maintaining the guidelines and manuals reflecting the 568 Group's purported Overarching Agreement regarding the Consensus Approach, the CM, and Professional Judgment.

177. First, the 568 Group maintained dedicated email list serves for its members at-large as well as for its Technical Committee, to facilitate both formal information sharing in connection with its conferences and other events, as well as informal information sharing when members had one-off questions about the financial aid practices of other members.<sup>227</sup>

178. Second, the 568 Group hosted regular in-person, multi-day conferences for its members regarding policies and practices concerning financial aid. As reflected in part by the summary of meetings contained in Appendix 8, the 568 Group hosted annual and semiannual conferences between 2004 and 2022.<sup>228</sup> The conferences were often scheduled to coincide with the meetings of other groups (such as COFHE or Campus Needs Analysis Roundtable) in which 568 Group schools were also participating.<sup>229</sup>

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227. Columbia\_00057763; COFHE-02-00011635.

228. *See, e.g.*, Columbia\_00258494 (listing 28 meetings between 2007 and 2021).

229. Columbia\_00056392; COFHE-02-00012996; BROWN\_0000015719; COFHE-02-00013623.

179. COFHE personnel would help to organize the 568 Group conferences.<sup>230</sup> COFHE and College Board representatives would also regularly attend such meetings and participate in panels. The 568 Group schools typically sent their directors of financial aid, or other staff of the school's financial aid group, who would often report back to their schools regarding conference highlights.<sup>231</sup> It also gave members opportunities to informally discuss practices between sessions.<sup>232</sup>

180. The conferences covered numerous topics, often including multiple areas of needs analysis. A typical example from 2010 shows that the agenda called for four separate sessions over more than four hours on "Need Analysis Topics" addressing projected year income, retirement issues, illiquid assets, sibling and parent educational expenses, and assessment rates, among other topics.<sup>233</sup> Other times the sessions would explicitly cover the CM, under headings such as "Need Analysis Guidelines Review."<sup>234</sup>

181. As part of these discussions and to inform them, attendees often addressed their current practices via surveys or case studies and hypotheticals.<sup>235</sup> In 2012, for example, the 568 Group schools answered a 40-question survey asking detailed questions about how the schools treated everything from divorced parents, parents' own education loans, and home value.<sup>236</sup> In December 2014, the Technical Committee designed a survey reflecting a "not-so-hidden agenda[]" of trying to "ascertain the degree to which member institutions are employing (or not) the CM."<sup>237</sup>

56. Internal Columbia documents indicate that Defendants believed they could discuss current or proposed policies at their institutions so long it was in the context of "whether or not

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230. COFHE-02-00016939; BROWN\_0000015719.

231. COFHE-02-00002809; NULIT-0000110968.

232. Columbia\_00148923.

233. BROWN\_0000016487.

234. Columbia\_00177757.

235. See BROWN\_0000017726.

236. BROWN\_0000000308.

237. MIDDLEBURY04991.



something is a best practice in calculating families' need.”<sup>238</sup> In the end, while Defendants were in the 568 Group—whether through a stand-alone 568 Group request, through COFHE, or through CNAR—they participated in at least nearly two dozen questionnaires or surveys, concerning such broad and specific topics as “Consensus Methodology,” “IM Need Analysis,” “Need Analysis,” “Treatment of Student Assets,” “Packaging,” “subject of parents not living together,” and “subject of assessing rental income.”<sup>239</sup>

182. Third, the 568 Group's Technical Committee was an active body, regularly analyzing and updating its assessment of need-analysis practices. The Committee typically comprised six to eight individuals, who would appoint a Chairperson and Vice-Chairperson.<sup>240</sup> Committee members communicated regularly via an email listserv as well as through conference calls.<sup>241</sup> The Chair and Vice-Chair of the Committee would frequently update 568 School presidents regarding 568 Group activities and conferences.<sup>242</sup> The Committee thus appears to have facilitated information gathering and the dissemination of information to 568 schools about needs-analysis practices.

183. The Technical Committee would organize the 568 Group conferences. In doing so, the Committee would reach out to 568 schools in advance to solicit ideas for discussions and assemble panels.<sup>243</sup> Then depending on the topic, the Technical Committee and presenters and panelists would draft case studies, provide reading materials, and perform surveys about members'

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238. Columbia\_00038443 at -450.

239. GTWNU\_0000324372; UCHICAGO\_0000183037; RICE\_LIT0000074981; AMHE-00000241; GTWNU\_0000019603; CORNELL\_LIT0000110940; BROWN\_0000043391; BROWN\_0000267023; GTWNU\_0000064932; BROWN\_000040855; MIDDLEBURY01697; AMHE-00003404; AMHE-00003417; AMHE-00003419; GTWNU\_0000052456; AMHE-00005786; MITLIT-000082112; AMHE-00008550; RICE\_LIT0000006950; JHULIT\_0000024124; AMHE-00013230; CBD004806.

240. CORNELL\_LIT0000002448; GTWNU\_0000323517.

241. AMHE-00000940.

242. CORNELL\_LIT0000108641 at -643 (letter from Vice Chair of 568 Group to Presidents requesting participation in virtual meeting); COFHE-02-00002578 at 580 (transmitting material from Chairman of 568 Group to Presidents); COFHE-02-00002944 (letter from Hunter Rawlings to Presidents of the 568 Group).

243. COFHE-02-00006464.

practices for further discussions at the conference.<sup>244</sup> On top of the general logistical support COFHE provided the 568 Group, a COFHE representative would regularly attend Technical Committee calls and meetings and was on the Technical Committees email list serv.<sup>245</sup>

184. The Technical Committee also helped to secure for the 568 Group the periodic renewal of the 568 exemption. Typically, a subcommittee of the Technical Committee would lead this effort, which would entail gathering support among 568 Group members and other purportedly eligible institutions (such as Harvard and Princeton) and coordinating with legal counsel on lobbying efforts. These efforts included, among other things, describing the value of the 568 Group and justifying the exemption's existence to Congress.<sup>246</sup>

185. Fourth, the 568 Group drafted and maintained the guidelines and manuals concerning the Consensus Approach, the CM, and the exercise of Professional Judgment.<sup>247</sup> The Technical Committee would take the lead on such updates and dissemination, but its efforts would be informed from feedback received and discussions with the "Need Analysis Council," which was the name given to all the other 568 Group schools who attended the regular conferences and meetings.<sup>248</sup>

186. The 568 Group undertook all of these activities within the Challenged Conduct. A document distributed ahead of a 568 Group meeting in 2019, for example, addresses the "Value of 568 Membership and Consensus Methodology" and shows that (a) the 568 Group believed that the CM was the way to spread out "limited [financial aid] dollars among greatest number of worthy applicants"; (b) the 568 Group believed that the CM ensured "consistent treatment" of families in "like circumstances" in part by lessening the "variance" in the needs analysis "among 568

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244. COFHE-02-00006827.

245. *Id.*; see also Downs-Burns 182:15-183:3, 184:12-24.

246. DUKE568\_0047047 at -048.

247. COFHE-02-00006797; Downs-Burns 61:4-62:19.

248. NULIT-0000110568.

institutions”; (c) a stated goal of the 568 Group was to “establish common approaches” for awarding financial aid; (d) a stated goal of the 568 Group was the “primacy of need-based aid”; (e) a stated goal of the 568 Group was to do an “annual” review and constant development of the CM; and (f) an illustrative example of a stated outcome of the 568 Group was “consensus” on using “common standard-of-living indices” and the “treatment of divorced/separated parents.”<sup>249</sup>

187. Similarly, the year earlier, 568 Group schools stated at a 568 Group meeting that if the 568 exemption did not exist, there would be more “variance” and “fragmenting” of needs analysis and that “merit aid would proliferate.”<sup>250</sup> The 568 Group schools thought the CM gave “control” to the budgeting so that if the budget increased year-to-year it was “a direct result of the students being accepted” and not because of a “changing” methodology.<sup>251</sup> The 568 Group schools recognized that the group “serves as a leadership role” in financial aid and that “schools below” them faced different circumstances.<sup>252</sup>

#### **4. Defendants Applied the Affordability Principle in Packaging**

188. With respect to loans, one key premise of the Overarching Agreement was that “[i]t is quite reasonable for parents and students to borrow to pay for college.”<sup>253</sup> The College Board has sensibly acknowledged that “reasonable” or “equitable” packaging is itself based on “ability to pay,” which includes the capacity to borrow to pay back any loans in the package.<sup>254</sup>

189. Assessing what a student and family could afford to borrow was the basis for the approach (in both the Base IM and CM) of considering home equity as assets but capping the amount as a multiple of available income. In February 2003, for example, Dr. Baum explained the rationale

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249. CALTECH000001723.

250. CBD004681.

251. *Id.* at -682.

252. *Id.*

253. Primer at 54.

254. Meade 308:13-309:11.

behind the then-current Base IM option of capping home value: “Three times income is an estimate of the maximum amount it is reasonable to borrow.”<sup>255</sup> The point was to make a purportedly reasonable assessment of what the family could afford to borrow using home equity as collateral: “If a family already has a large mortgage, they will not be able to take a home equity loan.”<sup>256</sup>

190. In considering using lower caps on home equity, the same rationale obtained: “A cap on home equity should reflect the reasonable borrowing capacity of families who choose to use the equity in their homes as a source of capital for funding their child’s education.”<sup>257</sup> In addition, as Dr. Baum has observed: “From the students’ perspective, grant aid, which is a pure subsidy not requiring payment, is most desirable and is the one form of aid that unambiguously increases the financial accessibility of college.”<sup>258</sup> It follows that when a school packages its institutional aid with loans, where it is acting consistently with its IM, it must be considering how much the student and family can afford to pay back, because only a grant “unambiguously” increases financial accessibility.

191. In connection with its packaging of its institutional financial aid, for example, Notre Dame’s Director of Financial Aid testified that the school was “certainly” thinking about the student’s capacity to pay back any need-based loans, including because there is a “directive” from the school’s board of trustees that says that cumulative debt should not be more than 10 percent of the four-year COA.<sup>259</sup> Notre Dame thus was not “indifferent” to what the student can afford to pay back; instead, there is a “sensitivity” to that issue, such that “a first generation who has no wealth

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255. GTWNU\_0000026367.

256. *Id.*

257. *Id.* at -369.

258. Baum, *Trends in Student Aid 2004*, at 2.

259. Nucciarone 114:3-15.

behind them to help them repay” would not be offered loans at all.<sup>260</sup> In short, “we clearly have a policy that is attentive to the reduction of loans.”<sup>261</sup>

**B. Quantitative Analysis Yields Results Consistent with All Defendants’ Having Engaged in the Alleged Overarching Conspiracy to Suppress Institutional Grant Aid**

192. In Part III.A.2.c below, I demonstrate through the use of standard econometric techniques that Defendants’ participation in the Challenged Conduct resulted in a general artificial inflation in Effective Institutional Prices compared to what those prices would have been in a more competitive benchmark period (that is, a period in which these Defendants were not concededly members of the 568 Group). These results are consistent with Defendants’ having engaged in the alleged Overarching Conspiracy to suppress institutional grant aid, and inconsistent with unfettered competition among Defendants.

**C. Quantitative Analysis Yields Results Consistent with Each Defendant’s Participation in the Challenged Conduct and Inconsistent with Unilateral Conduct**

193. In Part III.B.1 below, I demonstrate, through the use of regression analyses and in-sample prediction modeling, that each of the seventeen Defendants charged Effective Institutional Prices that were artificially inflated during the periods each was formally a member of the 568 Group as compared to a more competitive benchmark period. The inflated prices that I observe are consistent with each Defendant’s participation in the Challenged Conduct and inconsistent with unilateral conduct. It would have been too risky for any school, acting unilaterally, to materially inflate its Effective Institutional Price, as prospective students would have substituted to other Elite Private Universities.

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260. *Id.* 114:21-115:7.

261. *Id.* 176:17-18.

**D. Because the Challenged Conduct Satisfies Criteria That Economists Recognize as Indicative of Anticompetitive Conduct, It Is Consistent with the Alleged Conspiratorial Conduct and Inconsistent with Unfettered Competition**

**1. Economic Criteria for Assessing Qualitative Evidence in a Cartel**

194. Economists use qualitative evidence to study economically significant aspects of cartel behavior, including: (1) monitoring output or prices; (2) developing organizations to effectuate cartel policies; (3) developing inducements to support collusion; and (4) other indicia of collusion. There is qualitative evidence in this case, which I review below, that fall under these criteria and that are indicative of anticompetitive conduct.

195. For centuries, economists have studied monopolies, cartels, and their effect on competition and economic welfare.<sup>262</sup> In addition to quantitative analysis, economists have frequently brought their expertise to bear in analyzing documentary evidence of communications among cartel members and other qualitative aspects of cartel organization and behavior. In an article published in the *Journal of Economic Literature*, Professors Margaret Levenstein and Valerie Suslow review the empirical economic literature studying the determinants of cartel success.<sup>263</sup> As they explain, economists recognize that cartels often achieve collusion through the “development of sophisticated and flexible organizations,”<sup>264</sup> which they establish “over time as a result of organizational learning.”<sup>265</sup> Economists also recognize the “difficulties in observing and quantifying such information [on organizational learning] for a large number of industries.”<sup>266</sup> For this reason,

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262. See, e.g., M. C. Levenstein & V. Y. Suslow, *What determines cartel success?*, JOURNAL OF ECONOMIC LITERATURE, 44(1), 43-95 (2006) [hereafter Levenstein & Suslow (2006)]; see also DENNIS CARLTON & JEFFREY PERLOFF, MODERN INDUSTRIAL ORGANIZATION, 122-56 (Pearson 4th ed. 2004) [hereafter Modern IO (2004)]; Jonathan B. Baker, *The Case for Antitrust Enforcement*, 17(4) J. OF ECON. PERSPECTIVES 27-5 (2003); ADAM SMITH, AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS 660 (1776) (“People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices.”).

263. Levenstein & Suslow (2006).

264. *Id.* at 67.

265. *Id.*

266. *Id.* at 69.

economic case studies, which focus on a single cartel within a single industry, relying less on large data sets and more on qualitative evidence, “are much more amenable to studying organizational issues[.]”<sup>267</sup> Professors Levenstein and Suslow explain that “[s]tudies of U.S. cartels are often based on records from prosecutions of cartels.”<sup>268</sup>

**a. Monitoring Output or Prices**

196. Professors Levenstein and Suslow explain that “[c]ollusion in general implies . . . that the rival sellers in some manner arrive at an understanding as to what price to charge or what outputs to produce, or both.”<sup>269</sup> Economic case studies employ qualitative evidence to analyze how cartels develop organizational structures for monitoring cartel members’ prices, output, or both.<sup>270</sup> The economic literature reveals that cartels have devised a variety of mechanisms for the “collection and dissemination of information.”<sup>271</sup> For example, Professors David Genesove and Wallace Mullin studied the information-collection procedures of a sugar-refining cartel.<sup>272</sup> In a paper published in the *American Economic Review*, Professors Genesove and Mullin explain: “Our window into the inner workings of a cartel is a remarkable series of notes on the weekly meetings of the Sugar Institute.”<sup>273</sup> The authors explain that these documents provide valuable economic information by providing both “a record of the *communication* among the refiners”<sup>274</sup> and “the *reasoning* behind firms’ actions.”<sup>275</sup> Citing an interview-based economic study by Professor Alan Blinder of Princeton,

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267. *Id.* In their literature review, Professors Levenstein and Suslow specifically fault one study for failing to “examine the internal records of the cartels involved” to analyze “organizational issues.” *Id.* n. 68.

268. *Id.* at 49 n. 18.

269. *Id.* at 45.

270. *Id.* at 69-71.

271. *Id.* at 69.

272. David Genesove & Wallace Mullin, *Rules, Communication, and Collusion: Narrative Evidence from the Sugar Institute Case* 91(3) AM. ECON. REV. (2001) [hereafter Genesove & Mullin (2001)]; *see also* David Genesove & Wallace Mullin, *The Sugar Industry Learns to Organize Information Exchange*, in NAOMI LAMOREAUX, DANIEL RAFF, & PETER TEMIN, EDS., *LEARNING BY DOING IN MARKETS, FIRMS, AND COUNTRIES* 103-38 (1999).

273. Genesove & Mullin (2001) at 379.

274. *Id.* at 380 (emphasis in original).

275. *Id.* (emphasis in original).

the authors note that “a firm’s explanation of its conduct is also proof, since a theory describes the ‘chain of reasoning’ which motivates the firm.”<sup>276</sup> Professors Levenstein and Suslow review case studies spanning nineteen industries that used joint-sales agencies and other organizational structures as “schemes for sharing information” among cartel members.<sup>277</sup>

***b. Developing Organizations to Effectuate Cartel Policies***

197. Professors Levenstein and Suslow also review evidence of cartels’ tendency to “develop hierarchical organizations to effect cartel policies.”<sup>278</sup> For example, a prominent electrical equipment cartel from the 1950s used a two-tier organization structure. This cartel, made up of some forty electrical equipment manufacturers, set prices on twenty products with annual sales of \$2 billion, including switch gears, transformers, turbine generators, industrial controls, and other electrical equipment. For many product lines, there were two levels of cartel organization: (1) “a high level group of top executives and general managers,” and (2) “a working level group of sales managers.”<sup>279</sup> This case, involving both General Electric and Westinghouse Corporations, generated the first jail sentences imposed under the Sherman Act. Similarly, a citric-acid cartel from the early 1990s included one tier of “senior executives responsible for determining the broad outline of the cartel agreement,”<sup>280</sup> and a second tier of “lower-level executives responsible for the day-to-day workings of the cartel[.]”<sup>281</sup>

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276. *Id.* (citing Alan Blinder, *Why Are Prices Sticky? Preliminary Results from an Interview Study*, in Eytan Sheshinski & Yoram Weiss, EDS., *OPTIMAL PRICING, INFLATION, AND THE COST OF PRICE ADJUSTMENT* 409-21 (1993)).

277. Levenstein & Suslow (2006) at 69.

278. *Id.* at 72-74.

279. *Id.* at 72-73.

280. *Id.* at 73.

281. *Id.*



198. Such day-to-day cartel workings may be done by the firms directly, or it may be outsourced to a third party.<sup>282</sup> Professors Robert Marshall and Leslie Marx write in *The Economics of Collusion* that “[c]artel firms may be reticent to allow fellow cartel members access to their production facilities, or their sales records, for audit purposes, but each firm may be willing to grant such access to a third party that works on behalf of the cartel.”<sup>283</sup>

*c. Developing Inducements to Support Collusion*

199. Professors Levenstein and Suslow also review qualitative evidence on how cartels create inducements to support collusion.<sup>284</sup> They explain that cartels have adopted several arrangements to induce compliance among their membership, including regular meetings that allowed cartel members to “‘complete the contract’ by adjusting the agreement to evolving external conditions, such as fluctuations in demand.”<sup>285</sup>

**2. Record Evidence Satisfies the Economic Criteria Indicative of Defendants’ Alleged Anticompetitive Conduct and Thus Consistent with the Alleged Conspiracy and Inconsistent with Unfettered Competition**

*a. Monitoring Output or Prices*

200. The 568 Group’s periodic MOUs, as noted above, cited as one of the “purposes of the Group” the following: “Explore ways of developing a data exchange program as permitted by the MIT Settlement Standards of Conduct.” Defendants came to share competitively sensitive information through, among other ways, their preparation for and attendance at Group meetings, and their overlapping membership in, most prominently, COFHE.

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282. ROBERT C. MARSHALL & LESLIE M. MARX, *THE ECONOMICS OF COLLUSION: CARTELS AND BIDDING RINGS*, 130 (MIT Press 2012).

283. *Id.* at 132.

284. Levenstein & Suslow (2006) at 71-72.

285. *Id.* at 71.

201. With respect to 568 Group meetings, both in preparation and follow-up, the Needs Analysis Council frequently asked the member schools to answer, and the schools did answer, detailed survey questions regarding their financial aid policies and practices—including their application of the Core Principles and the components of the CM. Such surveys, even if anonymous, allowed the 568 schools to understand that they were all applying almost all of the Core Principles and that they were each applying most of the components of the CM—including most of the components most likely to impact needs analysis for most students. And the members of COFHE agree to share extensive data with each other from year to year, in colorbooks.

202. The competitively sensitive information that the Defendants shared with each other is consistent with facilitating the monitoring and enforcement of an alleged Overarching Agreement. The colorbooks contained compiled and analyzed data critical to helping the Defendants understand where they stood relative to their peer schools and to adjust their policies and practices accordingly.<sup>286</sup>

203. The exchange of the COFHE competitively sensitive information is consistent with furthering the alleged Overarching Agreement. First, COFHE was facilitating the exchange of competitively sensitive information among Defendants just as those schools could have directly exchanged the information with each other. Second, in the context of the relevant market here, the competitively sensitive information at issue was very recent—namely, from the immediately prior pricing cycle. Third, as shown elsewhere in this Report, the Defendants account for approximately three-fourths of the Elite Private University market.

204. The metrics in colorbooks were of competitive value to the Defendants in several ways. A first example is the Yellowbook data revealing the extent to which Defendants were using

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286. See generally Appendix 7.

their endowments to fund their institutional aid. This metric allowed Defendants to know and assure that they were not overspending as well, risking the ire of their fellow 568 Group schools.

205. A second example is the Yellowbook data revealing the extent to which the COFHE and Defendants were using self-help as part of their packaging. This metric allowed competing schools not to face allegations of unfair packaging—that is, as long as they were packaging loans with grants to a similar extent as their peers, they would appear to be competitive in that regard. At the same time, knowing where their peers stood on this metric has the effect of discouraging individual 568 Group schools from reducing self-help.

206. A third example is the data in the Bluebooks revealing how much institutional grant aid the schools were awarding to undergraduates and the percentage receiving such aid. These metrics allowed competing schools to compare and assess whether they were spending too much, or too little, on such aid within their peer group of schools.

207. The economic value of Defendants' exchange of competitively sensitive information through COFHE, in pursuing Defendants' goals, is further reflected in the contemporaneous documents. Defendants repeatedly discussed the prospect and utility of some exchange of competitively sensitive information—an exchange they achieved primarily through COFHE.

***b. Developing Organizations to Effectuate Cartel Prices***

208. The 568 Group engaged in regular and extensive activities throughout the Class Period, including organizing and holding regular in-person conferences, regularly analyzing and updating its assessment of needs-analysis practices through the Technical Committee, facilitating information-gathering and dissemination to 568 Group schools about such practices, and drafting and maintaining the guidelines and manuals reflecting the 568 Group's alleged overarching agreement regarding the Consensus Approach, the CM, and Professional Judgment.

209. First, the 568 Group maintained dedicated email list serves for its members at-large as well as for its Technical Committee, to facilitate both formal information sharing in connection with its conferences and other events, as well as informal information sharing when members had one-off questions about the financial aid practices of other members.

210. Second, the 568 Group hosted regular in-person, multi-day conferences for its members regarding needs analysis policies, practices, and updates. The 568 Group hosted nearly eighty (80) such conferences between 2004 and 2022. The conferences were often scheduled to coincide with the meetings of other groups (such as COFHE or the Campus Needs Analysis Roundtable) in which 568 Group schools were also participating. COFHE personnel would typically help to organize the 568 Group conferences. The 568 Group schools typically sent their directors of financial aid, or other staff of the school's financial aid group, who would often report back to their schools regarding conference highlights. Meeting agendas, distributed to attendees via the dedicated list serv, reflect that conferences covered numerous topics, including many areas of needs analysis. COFHE and College Board representatives would attend such meetings and participate in panels.

211. Third, the 568 Group's Technical Committee was an active body, regularly analyzing and updating its assessment of need-analysis practices. The Committee facilitated information gathering and the dissemination of information within the 568 Group about needs-analysis practices, policies, and updates.

212. The Technical Committee would organize the 568 Group conferences, reaching out to 568 Group schools in advance to solicit ideas for discussions and assemble panels. Depending on the topic, the Technical Committee and presenters and panelists would draft case studies, provide reading materials, and perform surveys about members' practices for further discussions at the conference. On top of the general logistical support COFHE provided the 568 Group, a COFHE

representative would regularly attend Technical Committee calls and meetings and was on the group's email listserv.

213. The Technical Committee also helped to secure for the 568 Group the periodic renewal of the 568 Exemption. A subcommittee of the Technical Committee typically would lead this effort, which would entail gathering support among 568 members and other eligible institutions (such as Harvard and Princeton) and coordinating with legal counsel on lobbying efforts. These efforts included, among other things, describing the value of the 568 Group and justifying the exemption's existence to Congress.

214. Fourth, the 568 Group drafted and maintained the guidelines and manuals concerning the Consensus Approach, the CM, and Professional Judgment. The Technical Committee would take the lead on such updates and dissemination, but its efforts would be informed from feedback received and discussions with the "Needs Analysis Council," the name given to all the other 568 Group schools that attended the regular conferences and meetings.

***c. Developing Inducements to Support Collusion***

215. This criterion, as noted, considers arrangements such as regular meetings among cartel members that allow them to adjust their agreement. In addition to the many such meetings among 568 Group members that I discuss above, Defendants—whether through a stand-alone 568 Group request, through COFHE, or through CNAR—participated in nearly two dozen questionnaires or surveys during the Class Period.

216. These questionnaires and surveys concerned such broad and specific topics as "Consensus Methodology," "IM Need Analysis," "Need Analysis," "Treatment of Student Assets," "Packaging," "subject of parents not living together," and "subject of assessing rental income." In 2012, for example, the 568 Group schools answered a 40-question survey asking detailed questions

about how the schools treated everything from divorced parents, parents' own education loans, and home value. The 568 Group shared these responses with members.

### III. COMMON IMPACT

217. In this section, I use qualitative evidence to highlight the nexus between the Challenged Conduct and the resulting artificially inflated Effective Institutional Prices. I then employ quantitative evidence to demonstrate that the Challenged Conduct resulted in artificially inflated Effective Institutional Prices. Using both in-sample prediction as well as a pricing structure analysis, I demonstrate how the generalized price effect captured in my regressions impacted all or almost all Class Members.

**A. Classwide Evidence Demonstrates that The Challenged Conduct Caused Artificially Inflated Effective Institutional Prices at All Defendants**

**1. Qualitative Evidence Details The Nexus Between The Challenged Conduct and The Resulting Artificially Inflated Effective Institutional Prices**

218. Defendants' own documents and actions reveal the nexus between the Defendants' Challenged Conduct and artificial inflation of Effective Institutional Prices that would have prevailed in the absence of such conduct.

219. In the first admissions cycle after implementing the CM (the fall of 2003), President Schapiro, then Chair of the 568 Group, wrote to the "568-Eligible Presidents," in part to ask for a more "formal commitment from participating institutions" and providing a draft Memorandum of Understanding.<sup>287</sup> That letter explained that "awards offered to common admits were, for the first time in many years, reasonably consistent across participating institutions."<sup>288</sup>

220. In 2021, in discussing reauthorization of the 568 Exemption, Notre Dame stated internally: "Without the Section 568 antitrust exemption, schools will also likely depart from Consensus Approach which ensures that all member schools are utilizing the best practices same

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287. GTWNU\_0000317271 at -272.

288. GTWNU\_0000317271.

approach to a consensus need analysis formula to arrive at similarly family contributions thus eliminating finances from the equation when a prospective student is considering several 568 schools for matriculation.”<sup>289</sup> That sentiment is consistent with notes reflecting a discussion among attendees at an October 2018 568 Group meeting about the “fragmenting” and “variance” that would occur if “568 were not permitted.”<sup>290</sup>

221. In August 2014, as another example, Vanderbilt’s Vice Provost for University Affairs (overseeing admissions and enrollment management) described how the 568 exemption allowed Defendants to avoid competition: “Vanderbilt benefits from this exemption, having the opportunity to discuss the methodology used to determine eligibility for need-based financial aid with similar institutions. This discussion allows for a common approach, so a family’s expected family contribution does not vary to any great extent from school to school. *It helps to avoid bidding wars between schools*, so families can focus on other aspects of selecting on other aspects of selecting an institution; not focusing on the lowest net price.”<sup>291</sup>

222. Yale announced its departure from the 568 Group in the spring of 2008 (effective for the incoming class enrolling in fall of 2008) on the rationale that the Group constrained Yale’s ability to compete for students by offering more generous aid, and thus lower Net Prices. Yale’s then-Director of Student Financial Services, Caesar Storlazzi, concluded: “By leaving the 568 Group, Yale is now free to give families more aid than they would have gotten under the consensus

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289. ND\_1062636.

290. CBD004681.

291. VANDERBILT-00047310.



methodology.”<sup>292</sup> The 568 Group imposed “one needs-analysis formula that everyone has to sign on to.”<sup>293</sup>

223. With its announcement, Yale adopted an income threshold of \$60,000, under which there would be no parental contribution to the COA.<sup>294</sup> This was in line with the explicit connection that, in announcing its departure, Yale had drawn between its departure and the impact on its net prices: “In other words, the percentage of a family’s income and assets that Yale takes as a parental contribution is now lower than the percentage taken by 568 Schools.”<sup>295</sup>

224. In response, the 568 Group took steps to ensure that its members did not follow any such approach. In October 2008, the head of the Technical Committee, Mr. Belvin, stated that the automatic waiver of parental contributions “should not . . . be a standard applied to groups of students” under the CM.<sup>296</sup> In December 2008, Mr. Belvin told the 568 Group that “[i]nstitutional policy statements should not modify the aid office’s requirement to evaluate all applications using the Consensus Approach,” stating that waiving tuition for families with incomes below \$60,000 should “not . . . be . . . automatic.”<sup>297</sup> Other Defendants that announced their departure from the 568 Group recognized that the participation in the Group hampered their abilities to offer more Institutional Financial Aid and thus lower Net Prices. The University of Chicago acknowledged in 2013 that “568 Group – it is hampering our ability to compete.”<sup>298</sup> After the University of Chicago purportedly left the group, Columbia subsequently observed: “On October 1, 2014, the University

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292. Caitlin Roman, *University Leaves Financial Aid Group*, YALE DAILY NEWS (Sept. 26, 2008), <https://yaledailynews.com/blog/2008/09/26/university-leaves-financial-aid-group/>.

293. *Id.*

294. *Yale Cuts Costs for Families and Students*, YALENEWS (Jan. 14, 2008), <https://news.yale.edu/2008/01/14/yale-cuts-costs-families-and-students>.

295. Caitlin Roman, *University Leaves Financial Aid Group*, YALE DAILY NEWS (Sept. 26, 2008), <https://yaledailynews.com/blog/2008/09/26/university-leaves-financial-aid-group/>.

296. GTWNU\_0000009794.

297. GTWNU\_0000009789 at -791.

298. UCHICAGO-0000052966, at -967.

of Chicago launched a major financial aid initiative and outreach plan, dramatically improving their financial aid program and increasing outreach to low-income students.”<sup>299</sup>

225. In purportedly leaving the 568 Group, in 2012, Emory officials lamented that the Group “generates a restrictive environment for packaging financial aid at a time when college and universities need to be more flexible and responsive.”<sup>300</sup> Emory had concluded in 2011: “We must drop our membership in the 568 group as it does not allow us to be as flexible as we should be with families.”<sup>301</sup>

226. Similarly, the record evidence is consistent with institutions like Harvard, Stanford, and Princeton not joining the 568 Group in order to be more generous with their institutional aid offers. Defendants repeatedly linked their decisions not to join the 568 Group to a desire to be more generous.<sup>302</sup> Harvard, Stanford, and Princeton did likewise. Harvard’s former Financial Aid Director recalled that Harvard did not join the 568 Group because it “would not be able to award the financial aid we had awarded to families. We’d have to reduce it.”<sup>303</sup> Princeton’s former Director of Undergraduate Financial Aid explained Princeton did not join because Princeton wanted “financial aid to be under our control.”<sup>304</sup> And Stanford’s Associate Dean and Director of Financial Aid explained Stanford did not join because it was “headed in a direction that was a little more generous than what [the 568 Group was] proposing, and we didn’t feel like we needed to be part of those conversations.”<sup>305</sup>

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299. Columbia\_00246837.

300. Emory\_568Lit\_0006214.

301. Emory\_568Lit\_0023692.

302. PENN568-LIT-00133526 (“Harvard and Princeton never joined because they did not want to limit the usage of their funds.”); Columbia\_00056363 at -364 (noting that Harvard, Yale, and Princeton could be “significantly more generous” and are not applying the CM).

303. Donahue 56:4-15.

304. Betterton 17:20-18:11

305. Cooper 19:24-20:11.

**2. Quantitative Evidence Demonstrates that the Challenged Conduct Resulted in Artificially Inflated Effective Institutional Prices at All Defendants to a Statistically Significant Degree**

227. I measure the effect of the Challenged Conduct by contrasting Effective Institutional Prices that Class Members paid during the Class Period, which is characterized by each individual Defendant's membership in the 568 Group against a benchmark that involved pricing during periods where Defendants were not formally part of the 568 Group. Such "clean" periods inform a conservative "but-for" world that would have prevailed absent the Challenged Conduct. Known as the "before-after" methodology, this standard empirical approach enjoys frequent application in both research and litigation.<sup>306</sup> To apply the before-after model, economists, researchers, and other practitioners typically use multiple regression analysis, which I do in this report.

228. The benchmark I use is a conservative approach in that it likely understates the effect of the Challenged Conduct for at least two reasons. First, I include in the benchmark periods in which Defendants claim to have left the 568 Group, but during which the 568 Group continued to exist. It is certainly possible and indeed likely that due to the economic concept known as the "umbrella effect" the relevant prices charged by Defendants who were in the Group but left, or who had not yet joined the Group, had their prices inflated by the Challenged Conduct. In other words, the but-for world is a counterfactual world during which the Challenged Conduct did not occur at all, whereas my benchmark includes periods during which the Challenged Conduct exists, but individual Defendants either left or had yet to join. Because of the umbrella effect, the prices of schools who

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306. Theon van Dijk & Frank Verboven, *Quantification of Damages*, in 3 ISSUES IN COMPETITION LAW AND POLICY 2331, 2332 (2008) ("The concept underlying most economic damages assessments is that of the "but-for" world."). Note that while this methodology is termed the "before-after" model, it does not depend on the ordering of when the anticompetitive conduct occurred. Rather, it merely requires there be a clean period and a "conduct period" in order to make a comparison between the two. For instance, in Appendix 3 Table 1, I show that Yale had entered and exited the 568 Group on multiple occasions. Therefore, the model compares the average Effective Institutional Price across all of the periods for which Yale participated in the Challenged Conduct to the average Effective Institutional Price across all of the periods for which Yale did not participate in the Challenged Conduct.

had left or had yet to join may well have been inflated due to the presence of the Challenged Conduct in the market in which they competed.<sup>307</sup> Second, my method credits the claims by Defendants to have withdrawn from the 568 Group and counts these periods as “clean.” But economics suggests that the prices set by participating in the cartel, as the Challenged Conduct is alleged to have been, do not necessarily fall back to competitive levels immediately. Thus, for these reasons, my benchmark includes prices that may well be inflated by the Challenged Conduct, and thus would tend to understate the Challenge Conduct’s true economic effects on prices.

229. Economic theory and the facts of the case inform the econometric modeling and the attendant assumptions.<sup>308</sup> As such, I approached my task by evaluating the theoretical basis for the various control variables that I include in my regressions. These variables attempt to “control” for potential factors that may confound the relationship between the treatment (the Challenged Conduct) and the outcome (Effective Institutional Prices).

230. As is often the case, data limitations imposed some restrictions on the variables that could serve as controls. In this case, I control for any unobserved potential confounders using

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307. According to economics literature, even in the absence of direct evidence of a price-fixing conspiracy, the products sold by non-defendants (here, the Effective Institutional Price of attending a non-defendant Elite Private University) could still be priced at a supercompetitive rate due to the pricing umbrella effect stemming from the Challenged Conduct by the Defendants. *See, e.g.,* Johannes Odenkirchen, *Pricing behavior in partial cartels*, NO. 299 Dice Discussion Paper (Sept. 2018), [https://www.dicegraduiertenzentrum-medizin.hhu.de/fileadmin/redaktion/Fakultaeten/Wirtschaftswissenschaftliche\\_Fakultaet/DICE/Discussion\\_Paper/299\\_Odenkirchen.pdf](https://www.dicegraduiertenzentrum-medizin.hhu.de/fileadmin/redaktion/Fakultaeten/Wirtschaftswissenschaftliche_Fakultaet/DICE/Discussion_Paper/299_Odenkirchen.pdf), 2 (“Supporting standard theory, we find that a partial cartel is sufficient to distort market prices. Average market prices are higher when partial cartels form than without any cartel in the market. This confirms the expected umbrella effect.”); *see also* Roger D. Blair & Virginia G. Maurer, *Umbrella Pricing and Antitrust Standing: An Economic Analysis*, UTAH LAW REVIEW, 763, 764 (1982), [https://collections.lib.utah.edu/dl\\_files/ed/fa/edfaa60c96f5b5049eac4ab1263da40a32996b32.pdf](https://collections.lib.utah.edu/dl_files/ed/fa/edfaa60c96f5b5049eac4ab1263da40a32996b32.pdf) (“If the dominant firms fix prices, purchasers from the competitive fringe firms will still pay a price that exceeds what the market price would be in the absence of collusion. That result is mandated by the competitive fringe firms’ role as price takers. In other words, fringe firms will not act as though their output decisions have a perceptible influence on price. Accordingly, they charge the current market price and simply adjust their output level to maximize profits. Thus, the fringe firms set their prices under the ‘umbrella’ of the dominant firms.”).

308. SCOTT CUNNINGHAM, *CAUSAL INFERENCE: THE MIXTAPE* 98-99 (Yale Univ. Press 2021) (“And finally, DAGs drive home the point that assumptions are necessary for any and all identification of causal effects, which economists have been hammering at for years.”).

standard econometric techniques, such as including student fixed effects.<sup>309</sup> I describe student fixed effects below.

231. In discovery for this matter, Defendants produced their structured financial aid data, which I use to perform my analysis. Some Defendants produced data back to 1998. Others produced data only covering more recent years. The inclusion of data prior to the 2003 academic year is of particular significance, as it covers a “clean” period before the Challenged Conduct allegedly began.<sup>310</sup> Some Defendants claim to have exited the 568 Group during certain years subsequent to 2003.<sup>311</sup> Brown, Chicago, Columbia, Dartmouth, Duke, Northwestern, Penn, and Yale all provided structured financial aid data prior to and after 2003, providing me with variation in Effective Institutional Prices prior to and during the Class Period. Caltech, Cornell, Emory, Georgetown, Johns Hopkins, MIT, Notre Dame, Rice, and Vanderbilt did not produce structured data prior to 2003, *i.e.*, for the years prior to the alleged introduction of the Challenged Conduct. Further, I received limited post-conduct data from each Defendant.<sup>312</sup> I pool Defendants’ data into a single panel dataset: each observation contains the data for a single Class Member, in a single academic year, at each Defendant.

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309. See, e.g., Johnathan Baker & Daniel Rubinfeld, *Empirical Methods in Antitrust Litigation: Review and Critique*, 1 AMERICAN LAW AND ECONOMICS REVIEW (1999) 386-435, 392; see also James F. Nieberding, *Estimating Overcharges In Antitrust Cases Using A Reduced-Form Approach: Methods And Issues*, 9(2) JOURNAL OF APPLIED ECONOMETRICS 361-380 (2006); Daniel Rubinfeld & Peter Stiner, *Quantitative Methods in Antitrust Litigation*, 46 LAW AND CONTEMPORARY PROBLEMS 69-144, 123 n.77 (1983); *Proof of Conspiracy Under Federal Antitrust Laws* 224-230 (American Bar Association Section of Antitrust Law 2010).

310. Most Defendants entered into the Challenged Conduct starting in 2003. See, e.g., Appendix 3 Table 1.

311. In Appendix 3 Table 1, I show each Defendant’s Financial Aid data availability by academic year, as well as each academic year in which the Defendant allegedly participated in the Challenged Conduct.

312. All Defendants produced data for at least one year following the expiration of the 568 exemption, which could form part of a clean “after period.”

*a. Description of Defendants' Structured Financial Aid Data*

232. I understand that Defendants extracted their structured financial aid data from various financial aid database systems, including Banner, PowerFAIDS, and PeopleSoft. These databases contain data on student aid awards and offers, as well as student and parent financial data obtained from (1) the CSS Profile developed by the College Board and (2) the FAFSA form administered by the U.S. Department of Education. Institutions refer to the student-produced data in the CSS Profile and FAFSA form as “need analysis” data.<sup>313</sup> While some Defendants produced the entirety of their financial aid data within a single dataset, most Defendants produced multiple tables; provision of multiple tables required cleaning and combining each table to build a dataset usable for purposes of estimating the regressions detailed below.

233. Generally, data cleaning involved: (1) aggregating awards to yield one award observation per student in a given academic year from a given award source (such as federal or institutional) and of a given award type (such as grants or loans),<sup>314</sup> (2) identifying and filtering the need analysis data to the relevant variables used in my analysis,<sup>315</sup> (3) and combining the aggregated awards data to the filtered need analysis data using the student-academic year. I applied this framework to cleaning each Defendant’s data, and then stacked all cleaned Defendant datasets

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313. Some Defendants only produced financial aid applicant data from the CSS Profile, or only from the FAFSA. See my workpapers.

314. For example, there would be one observation for student “A” in academic year 2015 receiving \$2,000 in institutional grants, a separate observation for student “A” in academic year 2015 receiving \$5,000 in federal loans, another observation for student “B” in academic year 2012 receiving \$3,000 in federal loans, etc. To calculate institutional grant aid, I filtered the awards data to awards from an institutional source and of form “grant” or “scholarship.”

315. Most Defendants produced both FM (FAFSA) and IM (CSS Profile) versions of the student-level control variables that I include in my regressions, such as adjusted gross income. For the regressions described in this section of the report, my approach is to utilize the IM version of these variables unless the FM version provides either a more complete or valid measure of the underlying financial metric. For instance, if a Defendant has both an IM and FM version of a family’s cash, checking, and savings balance, with the IM version missing for 25 percent of observations and the FM version missing for less than one percent of observations, I rely upon the FM version of this variable for sake of completeness.

together into one pooled database that I used for my econometric analysis.<sup>316</sup> The resulting cleaned database yields one observation per student per academic year for each Defendant. I supplement these data with publicly available data sources described below.

234. First, I combine these data with data from the Integrated Postsecondary Educational Data System (IPEDS) by Defendant and academic year. IPEDS contains annual data that institutions of post-secondary education in the United States, including Defendants, provide to the Department of Education on an annual basis. These data have formed the basis for many papers in the literature and continue to be among the primary data on which educational research relies.<sup>317</sup> The Department of Education's National Center for Educational Statistics (NCES) web site provides various versions of the IPEDS data, including individual file types (*e.g.*, institutional characteristics, financial aid, enrollment data, and so on) as well as Microsoft Access versions for some years. Over time, various research organizations interested in analyzing such data have undertaken efforts to compile and harmonize these data; such think-tanks and research efforts include The Delta Cost Project, the Urban Institute, College Scorecard, Peterson's, and others. Research papers relying on these data are legion.<sup>318</sup>

235. I also make use of data from the Delta Cost Project (available for download online from the Department of Education). These data cover the period 1987-2015 and include various mappings between older and newer versions of IPEDS information. However, because updates to

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316. This type of data cleaning is typically required in all statistical studies with large bodies of data, particularly when there are multiple diverse data sources. Given that each of the seventeen Defendants produced its own data, the data cleaning process was expected.

317. *See, e.g.*, Su Jin Jez, *The Differential Impact of Wealth Versus Income in the College-Going Process*, 55 RES HIGH EDUC 710-734 (2014); John Bound, Breno Braga, Gaurav Khanna, & Sarah Turner, *Public Universities: The Supply Side of Building a Skilled Workforce*, 5 RSF: THE RUSSEL SAGE FOUNDATION JOURNAL OF THE SOCIAL SCIENCES 43-66 (2019); Amy Ellen Schwartz & Benjamin Scafidi, *What's Happened to the Price of College? Quality-Adjusted Net Price Indexes for Four-Year Colleges*, 39 THE JOURNAL OF HUMAN RESOURCES 723-745 (2004).

318. *Id.*

these data ceased in 2015, I supplemented these data with relevant IPEDS files for the remaining years until the most recent data available.

236. I include investment return data from Defendants' institutional annual endowment reports and the National Association of College and University Business Officers (NACUBO). I also include endowment level data from NACUBO and IPEDS.

237. Lastly, I include data on the unemployment rate and real gross domestic product (GDP) which come from the Federal Reserve Bank of St. Louis FRED database. I also include the Consumer Price Index for all urban consumers (CPI-U), which I use to adjust all financial data to 2024 inflation adjusted dollars.

***b. My Econometric Model***

238. The general framework I employ estimates Effective Institutional Price as a function of the Challenged Conduct and various control variables. In choosing such control variables, I have relied on both economic theory and documentary evidence that informs the factors that Defendants and the literature consider important when evaluating the Effective Institutional Price charged to individual students. I specify the following multivariate regression model:

$$Price_{ist} = \alpha + \beta Conduct_{st} + \sum_x STUD_{ist}^x + \sum_y UNI_{st}^y + \sum_z MACRO_t^z + \varepsilon_{ist}$$

The dependent variable,  $Price_{ist}$ , is the Effective Institutional Price for student  $i$  at institution  $s$  in academic year  $t$ . The independent variable,  $Conduct_{st}$ , measures whether the student's Effective Institutional Price was subject to the Challenged Conduct (conservatively crediting all Defendants for their claims of withdrawal) at institution  $s$  during academic year  $t$ . The coefficient on  $Conduct_{st}$  can be interpreted as the change in Effective Institutional Price associated with the conduct variable flipping from zero to one. I also include three sets of control variables— $STUD_{ist}^x$ ,  $UNI_{st}^y$ , and



$MACRO_t^z$ —which control for other relevant factors that explain variation in Effective Institutional Price.

239. The control variables that I use generally are based on those found in the economics literature on financial aid in higher education, such as adjusted gross income,<sup>319</sup> endowments,<sup>320</sup> and unemployment,<sup>321</sup> for instance. The error term,  $\varepsilon_{ist}$ , captures idiosyncratic variation in Effective Institutional Prices that is not explained by the model. It is standard practice in econometrics to include control variables that help explain variation in the dependent variable, and to increase precision of the model.<sup>322</sup> I describe each of these control variable sets below.

240. The control variables contained in  $STUD_{ist}^x$  include student and family level characteristics that explain variation in Effective Institutional Prices across students, universities, and academic years. These variables all are included in the Defendants’ structured financial aid data. I include control variables for the family’s adjusted gross income and net worth.<sup>323</sup> I include these control variables because the record evidence suggests that these variables factor into Defendants’

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319. C.M. Hoxby, *Benevolent Colluders? the Effects of Antitrust Action on College Financial Aid and Tuition*, IO: REGULATION (2000) [hereafter Hoxby (2000)]. Hoxby (2000) includes parents’ earned income as an explanatory variable in financial aid package regressions. Castleman & Long (2016) include parents’ adjusted gross income as a control variable in regressions of college attendance. B. L. Castleman, & B. T. Long, *Looking beyond enrollment: The causal effect of need-based grants on college access, persistence, and graduation*, JOURNAL OF LABOR ECONOMICS, 34(4), 1023-1073 (2016).

320. Hoxby (2000) includes both endowment per student and the percentage growth in endowment over the prior three years as explanatory variables in financial aid package regressions.

321. Hoxby (2000) includes financial market indicators as explanatory variables in financial aid package regressions.

322. JEFFREY WOOLDRIDGE, *INTRODUCTORY ECONOMETRICS: A MODERN APPROACH*, 1 (Thompson 4th ed. 2009) [hereafter WOOLDRIDGE] at 97 (“[E]conomists often include many control variables in order to isolate the causal effect of a particular variable.”); *id.* 86 (“With multiple regression analysis, we are able to include many factors among the explanatory variables, and omitted variables are less likely to be a problem in multiple regression analysis than in simple regression analysis.”).

323. For each of financial variables, I use the sum of both the student’s and parents’ values. Generally, the student values are either significantly lower than the parents’ values or are equal to zero since students are unlikely to have accumulated significant wealth or income at the age of entering college.

need analysis calculations, and thereby affect Effective Institutional Price.<sup>324</sup> I also include a control variable for the number of family members attending college. Families with siblings attending college during the same period generally receive greater institutional grant aid as a result of the increased financial burden of paying multiple tuitions, thereby resulting in lower Effective Institutional Prices.<sup>325</sup> Additionally, I include a variable for the student's year in college (*e.g.*, first year, second year, etc.). Economic theory suggests that private universities may “front-load” institutional grant aid—that is, the university is more likely to award larger aid to first-year students relative to non-first years as a mechanism to increase the likelihood the student chooses to attend the university.<sup>326</sup> Once a student is “locked-in” after his or her first year, it is less likely that the student will withdraw from the university if the university later reduces their institutional grant aid.<sup>327</sup> Because of this, the university may reduce institutional grant aid, thereby increasing the Effective Institutional Price, in subsequent years. I also include a control variable equal to the sum of each student's gift aid received from non-institutional sources, including federal and state grants.

241. The control variables contained in  $UNI_{st}^y$  include institutional level characteristics that are likely to explain variation in Effective Institutional Price across institutions and academic

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324. Adjusted gross income and net worth are two primary factors that determine institutional grant aid and therefore influence Effective Institutional Prices. *See, e.g.*, CALTECH000007069 at -071-072 (showing parental contributions based on adjusted gross income and net worth).

325. Joshua Goodman, Michael Hurwitz, Jonathan Smith, and Julia Fox, *The relationship between siblings' college choices: Evidence from one million SAT-taking families*, *ECONOMICS OF EDUCATION REVIEW* 48 75-85, 83 (2015). (“Federal financial aid is, for example, calculated in part based on the number of children in the family currently enrolled in college. Having an older sibling enrolled in any college can therefore increase the amount aid for which a younger sibling is eligible, reducing the net price of college.”). Note that while the Class is made up of students, not students' families, I include measures of family income and assets because the institutions consider these values when determining the institutional grant aid (and thereby the Effective Institutional Price) the student will receive.

326. Rochelle Sharpe, *Why Upperclassmen Lose Financial Aid*, *N.Y. TIMES* (April 4, 2016), <https://www.nytimes.com/2016/04/10/education/edlife/why-upperclassmen-pay-more-they-may-get-less.html> (stating that “the money is directed at wooing the best freshman class”).

327. *Id.* (“And, finally, there's the concern that colleges and universities, especially financially troubled ones, front-load merit aid to entice students to enroll, then lower or cut the award in later years.”); Mark Kantrowitz, *Front-Loading Financial Aid: Watch Out For This Sneaky Trick*, *THE COLLEGE INVESTOR* (Nov. 21, 2023), <https://thecollegeinvestor.com/44639/frontloading-financial-aid/>.

years.<sup>328</sup> *First*, I control for the university's lagged excess endowment investment return, measured by a three-year moving average data on "excess returns" of investment portfolios of Defendants' endowments, or those that exceed a target spending rate from the endowment and inflation.<sup>329</sup> Other things being equal, the higher the three-year moving average excess return in any year, the more resources the Defendants would have to devote to institutional grant aid, and thus lower the Effective Institutional Price.

242. To calculate excess returns, I use the investment return data from Defendants' institutional annual endowment reports and the NACUBO. I also use data on endowment levels from NACUBO and National Center for Education Statistics Integrated Postsecondary Education Data System (NCES IPEDS). From the reported returns, I subtract both a spending rate and an inflation rate. For the spending rate, I assume it to be the same across all Defendants—namely, the 4.7% average spending rate over the 2003-22 period, based on data reported by the National Association of College and University Business Officers (NACUBO) for institutions with endowments of \$1 billion or more.<sup>330</sup> For the inflation rate, I use the annual change in the Higher Education Price Index (HEPI), reported by the CommonFund, because of the unique characteristics associated with the costs of higher education.

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328. The institutional level control variables from IPEDS are reported for 1998-2021, and the endowment data goes from 1999-2021. I supplement missing 2022 institutional tuition revenue data and missing 2022-2023 undergraduate enrollment data using public sources (*e.g.*, Defendants' websites). For remaining missing observations, I extrapolate the institutional control variables for each Defendant by regressing the control variable on a linear time trend and a COVID dummy variable, and then using the predicted value from this regression to replace the missing value.

329. Endowment revenues are a fixed percentage (often 4-5 percent) of the lagged 3-year endowment level. In addition, record evidence indicates that Defendants disburse a percentage of the market values of their endowments, typically averaged over several years, toward their annual operating budgets, which take account of financial aid or sticker price discounts. I use the 3-year moving average of endowment because it is typical of Defendants' distribution formulae. The three years smooth out annual fluctuations.

330. I tested the sensitivity of my regressions to the use of actual annual spending rates based on the NACUBO data, and the results reported do not change in a material way. For years for which I have data on the effective spending rates from endowments for the Defendants, they closely mirror the averages for institutions with endowments of at least \$1 billion reported in NACUBO.

243. *Second*, I control for the university's tuition revenue from the prior year divided by its FTE undergraduate enrollment. As with endowment, greater institutional tuition revenues should provide a university with greater capacity to offer more generous awards. *Third*, I control for the percentage of undergraduates that received any source of gift aid.

244. The control variables in  $MACRO_t^Z$  include macroeconomic variables that likely contribute to variation in Effective Institutional Price across academic years. These data come from the Federal Reserve Bank of St. Louis (FRED) economic database, which is widely used in the federal government and in the private sector as a source of macroeconomic data.<sup>331</sup> I control for the national unemployment rate. The unemployment rate likely has an indirect effect on financial aid by shifting demand for higher education.<sup>332</sup> I also include a dummy variable for the COVID-19 pandemic, which is equal to one in 2020 and equal to 0 otherwise. Dummy variables such as this are commonly used in the economics literature to account for discrete events.<sup>333</sup> I include a time trend, which are commonly used in the economics literature to control for general tendencies in economic data to increase or decrease over time, especially for data that spans long time periods such as over

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331. Michael W. McCracken and Serena Ng, *FRED-QD: A Quarterly Database for Macroeconomic Research*, FEDERAL RESERVE BANK OF ST. LOUIS REVIEW, First Quarter 2021, 1-44 (2021) ("FRED-MD has been successful. It has been used as a foil for applying big data methods including random subspace methods (Boot and Nibbering, 2019), sufficient dimension reduction (Barbarino and Bura, 2017), dynamic factor models (Stock and Watson, 2016), large Bayesian VARs (Giannone, Lenza, and Primiceri, 2018), various lasso-type regressions (Smeekes and Wijler, 2018), functional principal components, (Hu and Park, 2017), complete subset regression (Kotchoni, Leroux, and Stevanovich, 2019), and random forests (Medeiros et al., 2019). In addition, these various methods have been used to study a wide variety of economic and financial topics including bond risk premia (Bauer and Hamilton, 2017), the presence of real and financial tail risk (Nicolò and Lucchetta, 2016), liquidity shocks (Ellington, Florackis, and Milas, 2017), recession forecasting (Davig and Hall, 2019), identification of uncertainty shocks (Angelini et al., 2019), and identification of monetary policy shocks (Miranda-Agrippino and Ricco, 2017). Finally, and perhaps most rewarding, is that it is described as the inspiration to the development of a Canadian version of FRED-MD (Fortin-Gagnon et al., 2018).").

332. Lisa Barrow & Jonathan M. V. Davis, *The Upside of Down: Postsecondary Enrollment in the Great Recession*, 36(4) FEDERAL RESERVE ECONOMIC PERSPECTIVES (2012), [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2386168/](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2386168/).

333. WOOLDRIDGE at 354 ("Often, dummy variables are used to isolate certain periods that may be systematically different from other periods covered by a data set.").

the 27 years of Defendants' data analyzed in this instance.<sup>334</sup> Lastly, I include real gross domestic product (GDP), which controls for business cycle fluctuations such as the great recession.<sup>335</sup>

245. In addition to the numerous control variables described above, I also include both institution and student fixed effects.<sup>336</sup> A fixed effect is a variable that controls for time-invariant individual-specific characteristics; economics literature commonly makes use of such variables to account for unobserved, individual-specific factors that do not vary over time.<sup>337</sup> In this instance, institution fixed effects control for time invariant differences across Defendants. Likewise, student fixed effects control for time invariant differences across students, which may arise from differences in inherent academic ability and achievement that likely do not vary across time, and which may correlate with greater institutional grant aid for those Defendant universities that award merit-based aid.<sup>338</sup> Higher institutional grant aid would result in a lower Effective Institutional Price. Similarly, Effective Institutional Price may differ as a result of unobserved socioeconomic and demographic factors, such as race, first-generation status, or citizenship, all of which are controlled for via student-level fixed effects.

246. My primary dependent variable is Effective Institutional Price, which is the difference between cost of attendance and institutional grant aid. For cost of attendance, I use IPEDS

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334. WOOLDRIDGE at 366 (“[W]e must be careful to allow for the fact that unobserved, trending factors that affect  $y_t$  might also be correlated with the explanatory variables. If we ignore this possibility, we may find a spurious relationship between  $y_t$  and one or more explanatory variables. Fortunately, adding a time trend eliminates this problem.”).

335. GDP is commonly used to control for fluctuations in aggregate income that may correlate with a variety of economic factors, such as university enrollment. *See, e.g.*, Kevin L. Pennington, Dixie McGinty, and Mitchell R. Williams, *Community college enrollment as a function of economic indicators*, COMMUNITY COLLEGE JOURNAL OF RESEARCH AND PRACTICE 26, no. 5 431-437 (2002). (“In other words, a high Gross Domestic Product and high Personal Consumption Expenditure both tended to be very strongly associated with low enrollment in community colleges.”).

336. In my regressions tables that follow, I show results both with institution fixed effects, and with interacted institution-student fixed effects.

337. *See, e.g.*, WOOLDRIDGE, Chapter 14.1.

338. More specifically, student fixed effects will control for a student's *average* increase in institutional grant aid resulting from their greater academic achievement, but they will not control for whether a student's academic achievement changes over time.

data providing the sum of tuition, room, board, and fees.<sup>339</sup> For institutional grant aid, I filter Defendants' financial aid awards data to only include institutional grant aid awards.<sup>340</sup> I then limited these awards to include need based institutional grant aid only, and then summed up each student's need based institutional grant aid per each academic year.<sup>341</sup> I subtract each student's institutional grant aid from the average cost of attendance of their Defendant institution per academic year to generate Effective Institutional Price. I then limited the data to only include Class Members. To do this, I filter the data to only include observations where a student was awarded a positive institutional grant aid amount, and I drop any observations where a student was awarded a "full-ride" (i.e., where a student's total gift aid exceeded the cost of attendance).<sup>342</sup>

247. In Table 10, I present summary statistics for the variables I rely on from Defendants' structured data, IPEDS, and other publicly available data sources. For all dollar denominated variables, I use the Consumer Price Index for all urban consumers (CPI-U) to convert financial

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339. Because on-campus room and board is generally higher than off-campus room and board, I conservatively use on-campus room and board for purposes of my calculations. See Kat Tretina, *Tuition & Room and Board: On-Campus vs. Off-Campus Costs*, CREDIBLE (Mar. 14, 2024), <https://www.credible.com/student-loans/on-campus-vs-off-campus-costs>. IPEDS cost of attendance data is available from 1998-2022. Because of this, I extrapolate cost of attendance for the 2023-2024 academic years using linear extrapolation.

340. Defendants generally provided variables specifying the source and type of award, which allows me to filter down to institutional gift aid awards only. Yale only provided offer data, so I use offers instead of awards for Yale.

341. In Appendix 3 Table 2, I provide an average percentage of undergraduate institutional gift aid that is merit based by Defendant using data from the Common Dataset. Generally, the Ivy League institutions do not award any merit based institutional gift aid. See, e.g., Anika Arora Seth & Nicole Rodriguez, *Following antitrust expiration, merit and athletic scholarships become an option for the Ivy League*, YALE DAILY NEWS (Dec. 8, 2022), <https://yaledailynews.com/blog/2022/12/08/following-antitrust-expiration-merit-and-athletic-scholarships-become-an-option-for-the-ivy-league/>. For the other, non-Ivy League Defendants, I categorize gift aid into merit based and need based subtypes using either: (a) some form of a "merit" variable that differentiates merit based from need based gift aid, or (b) inferring whether an award is merit based or need based using the award description. If there was no practicable way to differentiate need based from merit based institutional gift aid using the data produced, I defaulted to using total institutional gift aid. E.g., I cannot reliably separate Rice's institutional merit based gift aid from their institutional need based gift aid, so I treat all institutional gift aid as being institutional need based grant aid. See my workpapers. I run sensitivity analyses using all institutional gift aid (including need based and merit based) as the dependent variable in my regressions in Appendix 4. The distinction makes no meaningful difference to my results.

342. Because cost of attendance may differ based on where a student lives, I filter the data to observations where the institutional grant aid was no larger than 95 percent of the cost of attendance. Student-academic years with total gift aid greater than 95 percent of the cost of attendance comprise 7.5 percent of the data.

information into constant 2024 dollars. In total, there are approximately 784 thousand student-academic years in the data. The average Effective Institutional Price for Class Members in the data is \$41,432, and the average institutional grant aid is \$39,200.

TABLE 10: REGRESSION DATA SUMMARY STATISTICS

Variable	Mean	SD	Min	Max	Obs.
Real Effective Institutional Price	\$41,432	\$20,291	\$3,357	\$95,875	783,741
Real Effective Institutional Price (Need-Based plus Merit-Based)	\$40,958	\$20,184	\$3,357	\$95,875	783,741
Real Institutional Grant Aid	\$39,200	\$21,484	\$1	\$91,150	783,741
Real Institutional Grant Aid (Need-Based plus Merit-Based)	\$39,674	\$21,364	\$1	\$91,150	783,741
Real Adj. Gross Income (\$ thousands)	\$130	\$98	\$0	\$13,088	783,741
Real Net Worth (\$ thousands)	\$219	\$1,221	-\$188,181	\$79,079	783,741
Number in College	1.4	0.6	0.0	9.0	783,741
Real Other Gift Aid	\$2,706	\$5,009	\$0	\$86,700	783,741
Year in College	2.4	1.2	1.0	4.0	783,741
Cumulative Three-Year Lagged Excess Returns	43.5%	48.8%	-49.5%	199.0%	783,741
% First Years Receiving Financial Aid	63.4%	8.4%	40.0%	100.0%	783,741
Real Tuition Revenue Per FTE Undergrad (1-year Lag)	\$77,022	\$33,993	\$31,977	\$193,741	783,741
Unemployment Rate	5.7	1.9	3.6	9.6	783,741
Real GDP (\$ billions)	\$18,085	\$2,255	\$12,643	\$22,585	783,741
Tuition CPI	717.0	169.4	312.5	940.0	783,741

*Sources:* Defendants' structured financial aid data; IPEDS; FRED; NACUBO; BLS. Observation counts are for the full dataset. Data limited to Class Members.

***c. Effective Institutional Price Regression Results Using Defendants' Structured Data***

248. In this section, I report results from applying the regression model described above to Defendants' structured data. To assess the effect of the Challenged Conduct on Effective Institutional Prices, I define a "conduct" variable using the record evidence of when each Defendant participated in the Challenged Conduct, while conservatively crediting those Defendants who left the 568 Group's claims of withdrawal. I provide a timeline of each Defendant's participation (with the caveat just discussed) in Appendix 3 Table 1. For each regression, I regress Effective Institutional Price on the conduct variable and control variables, all of which enter the model in levels, meaning that their coefficients can be interpreted as unit changes. A positive conduct coefficient implies that



the Effective Institutional Prices Class Members paid were artificially inflated as a result of the Challenged Conduct.

249. Table 11 presents regression results under six different specifications.<sup>343</sup> The first three columns show results when using institution fixed effects. Column (1) is a regression of Effective Institutional Price on the conduct variable, student-level control variables, and institutional fixed effects. In column (2), I add institution level control variables. In column (3), I add macroeconomic control variables. In columns (4-6), I report results for models 1-3 with the addition of student-level fixed effects.<sup>344</sup> The results of my student fixed effects model in column (6), shows that Effective Institutional Prices were artificially inflated by \$1,485 on average per Class Member-academic year as a result of the Challenged Conduct. In all six specifications, the conduct coefficient is both positive and economically significant, meaning that the Challenged Conduct resulted in an increase in Effective Institutional Price.<sup>345</sup> The conduct coefficient is statistically significant at a one percent significance level in all six specifications. This means that there is less than a one percent probability that the Challenged Conduct had no effect on Effective Institutional Price given such large conduct coefficients.

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343. Economists often report regression results under multiple specifications, as I do here, to show that the coefficient of interest is not highly sensitive to one specification. *See, e.g.*, FEDERAL JUDICIAL CENTER, NATIONAL RESEARCH COUNCIL, REFERENCE MANUAL ON SCIENTIFIC EVIDENCE, 322 (National Academies Press 3rd ed. 2011) (“The issue of robustness—whether regression results are sensitive to slight modifications in assumptions (e.g., that the data are measured accurately)—is of vital importance.”). Here I show six different specifications, including over a range of control variables and using both school and student fixed effects.

344. These student fixed effects are generated by interacting each student with each Defendant.

345. Economists consider both economic significance and statistical significance when interpreting results. Economic significance pertains to the overall size and sign of the coefficient. Statistical significance means that it is highly unlikely that the true value of the variable is equal to zero given such a large coefficient. WOOLDRIDGE at 135-136 (“Because we have emphasized statistical significance throughout this section, now is a good time to remember that we should pay attention to the magnitude of the coefficient estimates in addition to the size of the t statistics. The statistical significance of a variable  $x_j$  is determined entirely by the size of  $t_{\hat{\beta}_j}$ , whereas the economic significance or practical significance of a variable is related to the size (and sign) of  $\hat{\beta}_j$ . [] Too much focus on statistical significance can lead to the false conclusion that a variable is “important” for explaining y even though its estimated effect is modest.”).



TABLE 11: EFFECTIVE INSTITUTIONAL PRICE REGRESSION RESULTS

	Dependent Variable: <i>Effective Institutional Price</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
	<i>No Student Fixed Effects</i>			<i>Includes Student Fixed Effects</i>		
<b>Conduct</b>	<b>1,243.08***</b> (0.000)	<b>1,338.17***</b> (0.000)	<b>1,682.49***</b> (0.000)	<b>1,019.84***</b> (0.000)	<b>1,578.96***</b> (0.000)	<b>1,485.21***</b> (0.000)
Adj. Gross Income	11.53 (0.193)	11.49 (0.193)	11.46 (0.193)	1.09 (0.294)	1.08 (0.295)	1.04 (0.305)
Net Worth	1.35*** (0.000)	1.33*** (0.000)	1.33*** (0.000)	0.39*** (0.001)	0.38*** (0.001)	0.37*** (0.001)
Number in College	-1,076.59*** (0.000)	-1,067.70*** (0.000)	-1,082.15*** (0.000)	-4,636.32*** (0.000)	-4,645.29*** (0.000)	-4,679.05*** (0.000)
Year in College	1,370.43*** (0.000)	1,353.67*** (0.000)	1,340.30*** (0.000)	2,097.65*** (0.000)	1,870.31*** (0.000)	-504.92*** (0.000)
Student's Gift Aid from Other Sources	-0.37*** (0.000)	-0.37*** (0.000)	-0.37*** (0.000)	0.25*** (0.000)	0.26*** (0.000)	0.25*** (0.000)
Lagged Excess Endowment Investment Returns		1,737.00*** (0.000)	916.30*** (0.000)		5,576.97*** (0.000)	6,112.02*** (0.000)
Inst. Tuition Rev per FTE Undergraduate (1-year lag)		0.05*** (0.000)	-0.00 (0.860)		0.09*** (0.000)	0.03*** (0.000)
% of FY-FTE Undergrads Receiving Financial Aid		-187.82*** (0.000)	-198.43*** (0.000)		-46.28*** (0.000)	-66.20*** (0.000)
Unemployment (1-year lag)			-186.20*** (0.000)			-136.26*** (0.000)
COVID			4,933.93*** (0.000)			3,543.83*** (0.000)
Trend			400.83*** (0.000)			2,798.74*** (0.000)
Real GDP			-0.93*** (0.000)			-1.17*** (0.000)
Observations	726,773	726,773	726,773	726,773	726,773	726,773
R-Squared	0.14	0.15	0.15	0.84	0.84	0.84
Includes Institution Fixed Effects?	Y	Y	Y	Y	Y	Y
Includes Institution*Student Fixed Effects?	N	N	N	Y	Y	Y
Number of Fixed Effects	17	17	17	287,159	287,159	287,159

Notes: Robust p-values in parentheses; \*\*\*p<0.01, \*\*p<0.05, \*p<0.1. Adjusted Gross Income and Net Worth reported in thousands.

250. In Appendix 4, I present sensitivity tests of my Effective Institutional Price regressions.<sup>346</sup> In Appendix 4 Table 1, I test the same regressions as above using an alternative measure of Effective Institutional Price that is equal to cost of attendance minus both need based and merit based institutional grant aid. The coefficient for column 6 in that table is 1,494, meaning that the Challenged Conduct resulted in an artificial increase in Effective Institutional Prices of

346. It is my understanding that there appears to be conflicting evidence as to when Emory first implemented any part of the CM. My analysis is based on a 2004 start year. My results are insensitive to using an earlier start year of 2003.

\$1,494 when measured using both institutional need based and merit based gift aid. This alternative Effective Institutional Price definition therefore shows consistent results with my results above. In Appendix 4 Tables 2-3, I show results using a log-linear specification of the regressions above. Log-linear regressions are commonly used in the economics literature to estimate economic relationships in elasticity terms—that is, to show the percentage change in the dependent variable associated with a one percentage change in the independent variable. The results in column 6 of Appendix 4 Tables 2-3 show that Effective Institutional Prices were artificially inflated by approximately 4.4 percent as a result of the Challenged Conduct. In dollar terms, this corresponds to a \$1,746 artificial inflation in Effective Institutional Prices as a result of the Challenged Conduct, thereby implying that my regressions in Table 11 above may serve as a conservative estimate of the effect of the Challenged Conduct on Effective Institutional Prices.<sup>347</sup>

251. As discussed above, to the extent that the clean periods for the Defendants reflect any contamination from the Challenged Conduct—that is, even when a Defendant temporarily or permanently allegedly stopped engaging in the Challenged Conduct, it did not have to compete as aggressively for students as it would have competed had the 568 Group (and the attendant Challenged Conduct) ever existed. Thus, in light of spillover and umbrella effects,<sup>348</sup> my estimate of

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347. The average Effective Institutional Price during the Class Period is \$41,432. Therefore, the Effective Institutional Price absent the Challenged Conduct would be  $\$41,432 / (1 + 0.044) = \$39,686$ . The artificial increase in the average Effective Institutional Price is therefore  $\$41,432 - \$39,686 = \$1,746$ .

348. According to economics literature, even in the absence of direct evidence of a price-fixing conspiracy, the products sold by non-defendants (here, the Effective Institutional Price of attending a non-defendant Elite Private University) could still be priced at a supercompetitive rate due to the pricing umbrella effect stemming from the Challenged Conduct by the Defendants. *See, e.g.,* Johannes Odenkirchen, *Pricing behavior in partial cartels*, NO. 299 Dice Discussion Paper, 2 (2018) (“Supporting standard theory, we find that a partial cartel is sufficient to distort market prices. Average market prices are higher when partial cartels form than without any cartel in the market. This confirms the expected umbrella effect.”); *see also* Roger D. Blair & Virginia G. Maurer, *Umbrella Pricing and Antitrust Standing: An Economic Analysis*, UTAH LAW REVIEW, 763, 764 (1982), (“If the dominant firms fix prices, purchasers from the competitive fringe firms will still pay a price that exceeds what the market price would be in the absence of collusion. That result is mandated by the competitive fringe firms’ role as price takers. In other words, fringe firms will not act as though their output decisions have a perceptible influence on price. Accordingly, they charge the current market price

the conduct coefficient understates the total effect and thereby likely understates the adverse price effects of, and damages caused by, the Challenged Conduct.

**B. Classwide Evidence Shows That the Artificial Inflation in Effective Institutional Price Impacted All or Nearly All Class Members**

252. Using evidence and analyses common to the Class, I demonstrate that the artificial inflation in Effective Institutional Price resulting from the Challenged Conduct impacted all or virtually all Class Members. I base these findings on three distinct analyses.

253. I begin with the results of the regression model discussed in Part III.A.2 above. That model demonstrates that the average Effective Institutional Price was artificially inflated by \$1,485 per Class Member-academic year as a result of the Challenged Conduct. Using that model as a starting point, I then apply in Part III.B.1 a standard classwide econometric technique, “in-sample prediction,” to determine how widespread the effects of the Challenged Conduct were among Class Members—that is, whether the Effective Institutional Price paid by all or nearly all Class Members was artificially inflated during the Class Period by the Challenged Conduct. Using Defendants’ structured data, I compare the Effective Institutional Price *actually* charged to each Class Member during each academic year to the Effective Institutional Price that my regression model reveals Class Members *would have* been charged each academic year absent the Challenged Conduct, after taking into account all of the other relevant factors controlled for by the regression model. I can then calculate the proportion of Class Members that received artificially inflated Effective Institutional Price due to the Challenged Conduct. This method has been accepted in multiple prior antitrust class

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and simply adjust their output level to maximize profits. Thus, the fringe firms set their prices under the ‘umbrella’ of the dominant firms.”).

action cases.<sup>349</sup> In another analysis, in Part III.B.1, using my in-sample predictions, I also calculate the average artificial inflation in Effective Institutional Prices separately by Defendant (in percentage terms). My results show that each Defendant charged Effective Institutional Prices that were artificially inflated due to the Challenged Conduct, which is consistent with Plaintiffs' allegations that the Defendants as a whole, and each of them individually, participated in the Challenged Conduct, and is inconsistent with each Defendant setting Effective Institutional Prices unilaterally.

254. Next, I show that a common pricing structure would have transmitted the artificially inflated Effective Institutional Prices (found by the first prong) broadly across the Class. I show this using two analyses in Part III.B.2. *First*, I analyze whether a common shock—in this instance, a five percent reduction in the average Effective Institutional Price charged by a given Defendant—translates into reductions in the average Effective Institutional Prices paid by Class Members in each income decile at that Defendant institution. *Second*, I run price structure regressions. These regressions measure how an individual Class Member's Effective Institutional Price correlates with changes to the average Effective Institutional Price paid by *other* Class Members. This same methodology has been used in various antitrust cases to prove that defendants in those cases used a pay structure to set compensation.<sup>350</sup> I then provide qualitative evidence that is consistent with Defendants using a common pricing structure. Specifically, I show that Defendants consider the social or policy objectives of what industry participants commonly refer to as “horizontal equity”

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<sup>349</sup> See, e.g., *In re Air Cargo Shipping Servs. Antitrust Litig.*, No. 06-MD-1775 JG VVP, 2014 WL 7882100 (E.D.N.Y. Oct. 15, 2014) (Report and Recommendations adopted by *In re Air Cargo Shipping Servs. Antitrust Litig.*, No. 06-MD-1775 JG VVP, 2015 WL 5093503, at \*1 (E.D.N.Y. July 10, 2015)); *In re Packaged Seafood Prods. Antitrust Litig.* 332 F.R.D. 308 (S.D. Cal. 2019); *Olean Wholesale Grocery Corp., Inc. v. Bumble Bee Foods LLC*, 31 F.4th 651 (9th Cir. 2022); *Le v. Zuffa, LLC*, No. 2:15-cv-01045-RFB-BNW, 2023 WL 5085064 (D. Nev. Aug. 9, 2023); *Simon and Simon, PC d/b/a City Smiles and VIP Dental Spas v. Align Technology, Inc.*, No. 20-cv-03754-VC (N.D. Cal. Nov. 29, 2023); *In re Broiler Chicken Grower Antitrust Litig.*, No. 6:20-md-02977-RJS-CMR, 2024 WL 2117359 (E.D. Okla. May 8, 2024).

<sup>350</sup> See, e.g., *Johnson v. Arizona Hospital & Healthcare Ass'n*, No. CV 07-1292-PHX-SRB, 2009 WL 5031334 (D. Ariz. July 14, 2009); *In re High-Tech Employees Antitrust Litigation*, 985 F. Supp. 2d 1167 (N.D. Cal. 2013).

and “vertical equity” in their determination of financial aid. Horizontal equity is the principle that families of similar socioeconomic backgrounds should pay similar prices, while vertical equity is the principle that families with greater ability to pay should pay higher prices.<sup>351</sup> (In order to achieve either horizontal or vertical equity, a school must start by assessing what students can afford to pay, rather than what the school can afford to pay.) These principles are consistent with a common pricing structure.

### **1. In-Sample Prediction Based on Effective Institutional Price Regressions**

255. In-sample prediction, as described below, represents a standard method of demonstrating common impact in antitrust cases. This econometric method uses the output of my regression analyses to compare the Effective Institutional Price that students paid to what they would have paid “but-for” the Challenged Conduct.<sup>352</sup> I perform this test using the Defendants’ structured data regression model shown in Table 11, column 6. Under this method, a Class Member suffers antitrust injury whenever the Effective Institutional Price he or she paid for at least one academic year during the Class Period is greater than what he or she would have paid absent the Challenged Conduct. In other words, this approach uses the standard definition of harm as the difference between the actual and counterfactual (“but-for”) conditions.

256. This standard form of in-sample econometric analysis allows me to compute the proportion of Class Members that sustained antitrust injury as a result of the Challenged Conduct.

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351. Caltech explains: “There should be horizontal equity (also referred to as equity across the board) in the distribution of limited financial aid resources. That is, families in similar circumstances with similar resources should be expected to make similar contributions. Families in different circumstances should be expected to make contributions appropriate to their financial resources. This is known as vertical equity, and is sometimes referred to as leveling the playing field.” <https://www.finaid.caltech.edu/howitworks/principles>.

352. Theon van Dijk & Frank Verboven, *Quantification of Damages*, 3 ISSUES IN COMPETITION LAW AND POLICY 2331-2348, 2332 ABA Section of Antitrust Law (2008) [hereafter Dijk & Verboven (2008)] (“The concept underlying most economic damages assessments is that of the “but-for” world. In the case of a price-fixing agreement, the but-for world represents the economic outcome that would have occurred without the agreement. The difference between this counterfactual world and the actual world provides the measurement of damages.”).

The approach I use enjoys widespread acceptance. Courts have certified several antitrust class action cases where I, as well as other Plaintiffs' economists, have reliably used this method to demonstrate common impact.<sup>353</sup>

257. The introductory chapter of the Federal Judicial Center's *Reference Manual on Multiple Regression*, describes the logic supporting this approach, illustrating how multiple regression analysis inform whether individual Class Members suffered injury as a result of employment discrimination.<sup>354</sup> Here, I apply the same framework to determine whether Class Members suffered injury in the form of artificially inflated Effective Institutional Price as a result of the Challenged Conduct. The method begins by using the econometric model developed in Part III.A above, which control for factors (other than the Challenged Conduct) that may affect Effective Institutional Price.<sup>355</sup> In other words, the point of the regression is to isolate the role played by the Challenged Conduct on variances in the dependent variable, *i.e.*, Effective Institutional Prices charged by the Defendants. Next, the econometric model computes the Effective Institutional Price that Class Members would have received *in the but-for world*, and this assessment is compared to the Effective Institutional Price that Class Members were actually awarded.<sup>356</sup> If the actual Effective Institutional Price paid by a Class Member in a given academic year is greater than what the model

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353. See n. 350, *supra*.

354. REFERENCE MANUAL at n.4 ("The first step in such a regression analysis is to specify all of the possible 'legitimate' (*i.e.*, nondiscriminatory) factors that are likely to significantly affect the dependent variable and which could account for disparities in the treatment of male and female employees. By identifying those legitimate criteria that affect the decision-making process, *individual plaintiffs* can make predictions about what job or job benefits similarly situated employees should ideally receive, and then can measure the difference between the predicted treatment and the actual treatment of those employees. If there is a disparity between the predicted and actual outcomes for female employees, plaintiffs in a disparate treatment case can argue that the net 'residual' difference represents the unlawful effect of discriminatory animus on the allocation of jobs or job benefits.").

355. *Id.* ("The first step in such a regression analysis is to specify all of the possible 'legitimate' (*i.e.*, nondiscriminatory) factors that are likely to significantly affect the dependent variable and which could account for disparities in the treatment of male and female employees.").

356. *Id.* ("By identifying those legitimate criteria that affect the decision-making process, *individual plaintiffs* can make predictions about what job or job benefits similarly situated employees should ideally receive, and then can measure the difference between the predicted treatment and the actual treatment of those employees.").

predicts the Class Member would have paid in the but-for world for that academic year, this overpayment or “residual” represents antitrust injury to the Class Member attributable to the Challenged Conduct.<sup>357</sup>

258. After running the regression model specified in Table 11, column 6, I predict the but-for Effective Institutional Price for each observation belonging to a Class Member in the regression sample after unwinding the effect of the Challenged Conduct. I flag a Class Member as having been impacted if he or she has a single academic year in which his or her predicted Effective Institutional Price is lower than their actual Effective Institutional Price. I then count the number of Class Members impacted and divide this by the total count of Class Members in the sample during the Class Period.

259. Table 12 presents results of my analysis. In total, 97 percent of Class Members during the Class Period suffered harm as a result of the Challenged Conduct at least once based on in-sample prediction.

TABLE 12: IN-SAMPLE ANALYSIS  
PERCENTAGE OF CLASS MEMBERS IMPACTED AT LEAST ONCE

<b>Class Members in Sample</b>	<b>Class Member in Sample that were Impacted at least Once</b>	<b>Percent of Class Members Impacted at least Once</b>
224,744	218,081	<b>97.0%</b>

*Notes:* Percentage values correspond to the proportion of Class Members in the regression sample during the Class Period that have at least one academic year in which they were impacted by the Challenged Conduct (*i.e.*, their predicted Effective Institutional Price was less than their actual Effective Institutional Price).

260. I also use in-sample prediction to determine whether Effective Institutional Prices were artificially inflated by the Challenged Conduct at each Defendant. To do this, again I predict the but-for Effective Institutional Price for each observation belonging to a Class Member in the

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357. *Id.* (“If there is a disparity between the predicted and actual outcomes for female employees, plaintiffs in a disparate treatment case can argue that the net ‘residual’ difference represents the unlawful effect of discriminatory animus on the allocation of jobs or job benefits.”).

regression sample after unwinding the effect of the Challenged Conduct. I then compute an “overcharge percentage” for each Class Member and academic year equal to  $(P_a - P_{bf})/P_{bf}$ , where  $P_a$  is the Class Member’s actual Effective Institutional Price and  $P_{bf}$  is the Class Member’s predicted Effective Institutional Price but-for the Challenged Conduct. I average the overcharge percentage by Defendant over all Class Member-academic year observations in the sample during the Class Period.

261. Table 13 presents results of my analysis. I find that each Defendant charged Class Members higher Effective Institutional Prices on average as a result of the Challenged Conduct during the period it was formally in the 568 Group. As discussed above, this evidence is consistent with Plaintiffs’ allegations that the Defendants as a whole, and each of them individually, participated in the Challenged Conduct, and inconsistent with Defendants pricing unilaterally as a result of unfettered competition.



TABLE 13: IN-SAMPLE ANALYSIS  
EFFECTIVE INSTITUTIONAL PRICE OVERCHARGE PERCENTAGE BY DEFENDANT

Defendant	Effective Institutional Price Overcharge (%)
Brown	6.4%
Caltech	1.0%
Chicago	3.4%
Columbia	9.2%
Cornell	6.6%
Dartmouth	6.3%
Duke	3.9%
Emory	4.4%
Georgetown	5.3%
Johns Hopkins	7.8%
MIT	9.8%
Northwestern	4.2%
Notre Dame	3.0%
Penn	4.3%
Rice	8.5%
Vanderbilt	6.3%
Yale	8.5%

Notes: Percentage values correspond to the average Effective Institutional Price overcharge across Class Members and academic years in the sample during the Class Period.

## 2. Price Structure Analysis

262. Another standard method of proving Common Impact is a two-pronged, class-wide approach that has been accepted in antitrust litigation, including in *High-Tech Employee Antitrust* and in *Arizona Travel Nurses*.<sup>358</sup> Although those cases are compensation cases, the same principles apply in the evaluation of common movements within any pricing variable.<sup>359</sup> The first prong

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358. I was the plaintiffs' economic expert in *Arizona Travel Nurses*. The district court accepted my methodology for proving antitrust impact in *Johnson v. Arizona Hospital & Healthcare Ass'n*, No. CV 07-1292-PHX-SRB, 2009 WL 5031334 (D. Ariz. 2009). The same "two-step" methodology utilized in *Johnson* was accepted by the court in *In re High-Tech Employees Antitrust Litigation*, 985 F. Supp. 2d 1167, 1206 (N.D. Cal. 2013), *Order Granting Plaintiffs' Supplemental Motion For Class Certification* ("Plaintiffs noted that Dr. Leamer's approach followed a roadmap widely accepted in antitrust class actions that uses evidence of general price effects plus evidence of a price structure to conclude that common evidence is capable of showing widespread harm to the class."). See also, e.g., *Johnson v. Arizona* (finding predominance where conduct was alleged to suppress bill rates for nurses generally and evidence was presented that bill rates were correlated with nurse pay rates).

359. Hal Singer & Kevin Caves, *Analyzing High-Tech Employee: The Dos and Don'ts of Proving (and Disproving) Classwide Antitrust Impact in Wage Suppression Cases*, THE ANTITRUST SOURCE (Feb. 2015), at 5.

requires class-wide evidence demonstrating that the Challenged Conduct had a generally inflationary effect on prices paid by Class Members; this has already been shown using my Effective Institutional Price regression model in part III.A.2 above. The second prong involves determining whether there is classwide evidence of a common pricing structure that would transmit the artificially inflated prices (found by the first prong) broadly across the Class. The second prong is demonstrated below.

*a. Quantitative Evidence of an Effective Institutional Price Structure*

263. I employ two key approaches that inform the existence of an institutional price structure that would allow the effects of the Challenged Conduct to propagate to all or nearly all Class Members. *First*, I analyze how a common shock to the average Effective Institutional Price flows to the average Effective Institutional Price paid by Class Members across the income distribution. *Second*, I use price structure regressions to show how changes in average Effective Institutional Prices paid by Class Members at the same Defendant university and across other Defendant universities correlate with each Class Member's Effective Institutional Price.

264. In the first step described above, I show that changes to each Defendant's *average* Effective Institutional Price flow through to changes in Effective Institutional Price for the average Class Member, regardless of income level. To do this, I analyze whether a "common shock" in the average Effective Institutional Price results in similar shocks in Effective Institutional Price for students in similarly situated circumstances. Consistent with my common impact analysis, the Effective Institutional Price would have decreased in the absence of the Challenged Conduct (i.e., in the counterfactual, "but-for" world). As my quantitative analysis indicated above, the Effective Institutional Price would have decreased relative to the actual world had the Challenged Conduct not occurred. To examine how such a relative price decrease would have propagated throughout the Class, I flag instances in which a Defendant's average Effective Institutional Price decreased by at

least five percent year-over-year in the actual world.<sup>360</sup> I then analyze whether the average Effective Institutional Price for each income decile also decreased, therefore implying that a shock to the average results in a shock to each income level in the Class.

265. Specifically, I calculate 490 income deciles across all Defendants in years when such a common shock occurred (i.e., when one Defendant's Effective Institutional Price decreased by at least five percent from the previous year). Of these, I find that, in 420 of the income deciles (over 85 percent), the average Effective Institutional Price in that decile decreases as the average overall Effective Institutional Price at the given Defendant institution decreases.<sup>361</sup> This result indicates that when the Effective Institutional Price falls at a Defendant institution, the decline impacts Class Members at all income levels.

266. The second step I describe above provides further evidence of a price structure. To do this, I run regressions analyzing how changes in average Effective Institutional Prices paid by other Class Members correlate with the Effective Institutional Price paid by each Class Member. I first regress each Class Member's Effective Institutional Price on their "Peers' Average Effective Institutional Prices." This regression analyzes whether changes in the average Effective Institutional Price paid by other Class Members at the same Defendant institution in the same academic year are associated with the individual Effective Institutional Prices paid by a Class Member to their particular Defendant. *Second*, I test "Other Defendants' Average Effective Institutional Prices," or whether the average Effective Institutional Price paid by Class Members at other Defendants' institutions during the same academic year are associated with the price paid by an individual Class Member at a given Defendant institution. In each regression, I include the same control variables as

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360. As with my other analyses, both Effective Institutional Price and adjusted gross income are converted to 2024 dollars. Hence, my analysis looks at changes in *real* Effective Institutional Prices year-over-year.

361. See my workpapers for details.

those used in my regressions in Part III.A.2, including student fixed effects. Both approaches yield results consistent with the existence of such a price structure and inconsistent with its absence. In other words, I would not expect to obtain such results in the absence of a price structure.

267. Table 14 shows results of my price structure regressions. Column (1) presents results when regressing an individual Class Member's Effective Institutional Price on the average Effective Institutional Price paid by all other Class Members that attended the same Defendant institution during the same academic year (*i.e.*, Peers' Average Effective Institutional Price). The coefficient on Peers' Average Effective Institutional Price is 0.91, meaning that a one-dollar increase in the average Effective Institutional Price charged to other Class Members at the same Defendant institution is associated with a \$0.91 increase in the Effective Institutional Price charged to an individual Class Member attending the same institution. Column (2) presents results when regressing an individual Class Member's Effective Institutional Price on the average Effective Institutional Price charged to other Class Members at other Defendant institutions during the same academic year (*i.e.*, Other Defendants' Average Effective Institutional Price). The coefficient on Other Defendants' Average Effective Institutional Price is 0.68, meaning that a one-dollar increase in the average Effective Institutional Price charged to other Class Members at other Defendant institutions is associated with a \$0.68 increase in the Effective Institutional Price charged to an individual Class Member. Both coefficients described above are highly statistically significant at a one percent significance level. These results are consistent with common movements in Defendants' Effective Institutional Prices, and therefore provide class-wide evidence of a common pricing structure.

TABLE 14: PRICE STRUCTURE REGRESSIONS

	Dependent Variable: <i>Effective Institutional Price</i>	
	(1)	(2)
<b>Peers' Average Effective Institutional Price</b>	<b>0.91***</b> <b>(0.000)</b>	
<b>Other Defendants' Average Effective Institutional Price</b>		<b>0.68***</b> <b>(0.000)</b>
Adj. Gross Income	1.01*** (0.000)	1.03*** (0.000)
Net Worth	0.37*** (0.000)	0.35*** (0.000)
Number in College	-4,705.75*** (0.000)	-4,687.25*** (0.000)
Year in College	-230.34*** (0.000)	-539.33*** (0.000)
Student's Gift Aid from Other Sources	0.24*** (0.000)	0.25*** (0.000)
Lagged Excess Endowment Investment Returns	2,095.67*** (0.000)	3,322.46*** (0.000)
Inst. Tuition Rev per FTE Undergraduate (1-year lag)	-0.00 (0.492)	0.03*** (0.000)
% of FY-FTE Undergrads Receiving Financial Aid	-103.08*** (0.000)	-23.44*** (0.000)
Unemployment (1-year lag)	-133.13*** (0.000)	-187.38*** (0.000)
COVID	-91.84 (0.285)	737.49*** (0.000)
Trend	2,235.03*** (0.000)	2,404.68*** (0.000)
Real GDP	-0.36*** (0.000)	-0.33*** (0.000)
Observations	726,773	726,773
R-Squared	0.84	0.84
Includes Institution*Student Fixed Effects?	Y	Y
Number of Fixed Effects	287,159	287,159

Notes: Robust p-values in parentheses; \*\*\*p<0.01, \*\*p<0.05, \*p<0.1. Adjusted Gross Income and Net Worth reported in thousands.

268. In summary, my regression analysis in Section III.A.2 demonstrates evidence of a general Effective Institutional Price overcharge to Class Members. The evidence above reveals that Effective Institutional Prices (1) move together across peers attending the same Defendant

institution, and (2) move together across Defendants. This evidence shows that the price overcharge due to the Challenged Conduct was not confined to a subset of Class Members, but instead would have been broadly shared across all Class Members at all Defendants institutions.

***b. Qualitative Evidence of Defendants' Goals of Horizontal and Vertical Equity Are Consistent with an Effective Institutional Price Structure***

269. In some institutions, a social objective or policy goal in need-based aid, as noted above, is so-called “horizontal equity” across students—that is, families of similar socioeconomic status and size should receive similar aid.<sup>362</sup> Such institutions utilize “need analysis” to determine students’ financial aid.<sup>363</sup> Inputs to the need analysis include student and family level data contained in students’ FAFSA and CSS Profile applications, which are submitted to universities electronically from the Department of Education and the College Board. Institutions use these inputs to ensure that students in families with similar income, assets, and family structure are evaluated as having a similar ability to pay, and therefore receive similar financial aid packages.

**C. Discovery of Anticompetitive Effects**

270. In my opinion, a reasonable person would not have known that the Overarching Agreement had caused or was causing the economic impact I describe in Parts II and III. I base this opinion both on my own econometric work in this case and on evidence in the record.

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362. Ross Rubenstein, Ph.D., *The Institution Finance Perspective on Equity*, COGNIA (Fall 2016), <https://source.cognia.org/issue-article/school-finance-perspective-equity/>.

363. *Principles of Need Analysis*, CALTECH, <https://www.finaid.caltech.edu/howitworks/principles#:~:text=There%20should%20be%20horizontal%20equity,expected%20to%20make%20similar%20contributions> (last visited Mar. 2024), at 4 (“There should be horizontal equity (also referred to as equity across the board) in the distribution of limited financial aid resources. That is, families in similar circumstances with similar resources should be expected to make similar contributions.”); *Need Analysis*, NAICU, <https://www.naicu.edu/policy-advocacy/issue-brief-index/student-aid/needanalysis#:~:text=In%20the%20early%201950s%2C%20John,for%20students%20with%20financial%20needs> (last visited Mar. 2024).

271. With respect to my econometric work, it has been complex and complicated. Any statistically significant analysis of the economic impact of the Overarching Agreement, prior to this litigation, would have required someone to understand, at least, (a) the nature and scope of the Overarching Agreement, (b) the relationship among Tuition, COA, and Net Price; (c) the main components of the CM and Base IM in comparison to alternative IMs; (d) the distinction between federal financial aid and Institutional Financial Aid; (e) a nuanced understanding of variables among the Defendants affecting the calculation of their average Net Prices; (f) had access to all of the structured data that Defendants have produced in this litigation (under a confidentiality order) so as to be able to conduct a statistical analysis demonstrating that Defendants' participation in the 568 Group had the effect of suppressing their awards of Institutional Financial Aid; and (g) then have conduct the kind of the complex, multi-variable, regression-based analysis that I have conducted in my Report of how much Institutional Financial Aid the Defendants would have been awarding but for the Overarching Agreement.

272. In short, even if an intrepid person had tried to determine if the Overarching Agreement was having a negative economic impact on students receiving financial aid, he or she would not have been able to determine the answer. Record evidence bears out this conclusion, as both the contemporaneous documents and testimony in this case—much of which Defendants have designated as “Confidential” or even “Attorneys’ Eyes Only”—confirms the complexity of the country’s financial aid system in general and the inability of financial aid recipients to understand even the core concept of Net Price in particular.

273. In fact even if an intrepid reasonable person had searched for any literature analyzing the impact of the 568 Group, and they had seen the 2006 report of the Government Accounting Office (the “GAO Report”) analyzing that issue, and they had read and understood the report, they

would have likely concluded that the Group had not had any statistically significant impact. Such a conclusion would have been incorrect, given the limitations of the GAO Report, which I explain in my Report, but it still would have been the likely conclusion. A reasonable person, even a motivated and intrepid one, would not understand simply by reading the GAO Report the many reasons that its conclusions were not reliable or robust.

274. Dr. Baum has often spoken to the complexities of the system of awarding financial aid and the resulting inability of average people to understand its operation. Dr. Baum observed in 2005, for example, that “there is no simple way to draw a distinction between state need-based and non-need-based aid,” and that “[t]he ambiguity is even greater for institutional grant aid,” given that some schools award only Need-Based Aid, some schools mix in Need-Based Aid with merit aid solely for low-income students, and other schools mix in Need-Based Aid with merit aid for all income levels.<sup>364</sup>

275. Dr. Baum further observed in 2011 that “it is increasingly evident that the complexities of existing financial aid policies and programs make it difficult for many of those who most need the help to understand and navigate the system.”<sup>365</sup> She wrote this in consideration of “studies of low-income students and the difficulty they had in understanding and accessing the financial aid system.”<sup>366</sup> Similarly, as of 2011: “In recent years student financing has become more complex, and the line between student aid and other sources of funds has become less clear-cut.”<sup>367</sup>

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364. Sandy Baum, *Trends in Student Aid 2005*, COLLEGE BOARD (2005) at 3.

365. Sandy Baum, *Trends in Student Aid 2011*, COLLEGE BOARD (2011) at 7.

366. Baum at 130:6-23.

367. Baum at Ex. 7.



#### IV. AGGREGATE DAMAGES

276. To compute the aggregate overcharges from the Challenged Conduct to the Class as a whole, I begin with the regression models I set out in Part III.A.2. I use the average overcharge produced by my regressions (as described above) and multiply that by the number of Class Member-academic years subject to the Challenged Conduct.<sup>368</sup>

277. To calculate the number of Class Member-academic years, I first filter Defendants' data to the Class Period. I then limit the data to observations where a student received institutional grant aid, and I exclude observations where a student received gift aid from any source greater than or equal to their cost of attendance.<sup>369</sup> I then count up the number of unique student-academic years by Defendant and academic year.

278. Not all Defendants produced data covering all academic years in which they allegedly participated in the Challenged Conduct. Because of this, I supplement the count data described above with IPEDS data that provides the number of full-time equivalent undergraduates per Defendant and academic year. For those Defendants with missing data for certain years during the Class Period, I calculate their average ratio of unique student-academic years to their total undergraduate count from IPEDS over the academic years that they do have data for. I then multiply their total undergraduate counts from IPEDS by this average ratio for their academic years that are missing.

279. Additionally, Emory's and Dartmouth's data only includes first year undergraduates. Because of this, I scale Emory's and Dartmouth's count of unique student-academic years by the

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368. PROVING ANTITRUST DAMAGES, 95 (American Bar Association 3rd ed. 2017) ("The overcharge usually reflects the difference between the price actually charged and the price that would have prevailed in the absence of the anticompetitive conduct (i.e., the "but-for price under the "counterfactual"). Damages, at least for a direct purchaser, would then be the overcharge times the volume of sales.").

369. Because I include on-campus room and board in my cost of attendance calculation, I conservatively use 95 percent of the cost of attendance as an upper bound for total gift aid. That is, I drop observations if a student was awarded gift aid greater than 95 percent of the cost of attendance.

ratio of their full-time equivalent undergraduates to first-year full time equivalent undergraduates, which also come from IPEDS.

280. Defendants did not consistently produce financial aid data specifying whether students were U.S. citizens or permanent residents. Because of this, I scale the counts of unique student-academic years described above using the ratio of “non-resident aliens” to total undergraduates, both of which are provided by IPEDS. On average, “non-resident aliens” comprise ten percent of all undergraduates.<sup>370</sup>

281. Based on the methods described above, I calculate a total of 579,598 Class Member-academic years during the Class Period. Using my student fixed effects regression model in Table 11, I estimate that the Challenged Conduct resulted in a generalized artificial inflation in Effective Institutional Prices of \$1,485 per Class Member per academic year. In Table 15, I present damages to the Class as a whole by multiplying my estimate of the average artificial inflation per Class Member-academic year by the number of Class Member-academic years. I calculate aggregate damages of \$860.8 million.

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370. Foreign students generally account for a smaller proportion of institutional grant aid relative to U.S. citizens and permanent residents. Hence, this adjustment is likely conservative. *See*, Bound, J., Braga, B., Khanna, G., & Turner, S. (2016). *A passage to America: University funding and international students*, NATIONAL BUREAU OF ECONOMIC RESEARCH (No. w22981). (2016), available at [https://www.nber.org/system/files/working\\_papers/w22981/w22981.pdf](https://www.nber.org/system/files/working_papers/w22981/w22981.pdf) (“Capacity to pay for higher education is a potent factor in the flow of students to the U.S. at the undergraduate level. Unlike foreign doctoral students, who commonly receive full support in the form of fellowships, teaching assistantships, and research awards, foreign undergraduates are generally expected to make full tuition payments.”); *Financial Aid for Undergraduate International Students*, NAFSA, <https://www.nafsa.org/about/about-international-education/financial-aid-undergraduate-international-students> (last visited May 2024), (“Minimal scholarship aid is available to international students, and most of it is reserved for graduate study. Generally, U.S. institutions offer little, if any, discount on tuition, although both private and public institutions may waive application fees in some situations.”).

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TABLE 15: AGGREGATE DAMAGES (\$ MILLIONS)

Number of Class Member-academic years subject to the Challenged Conduct	579,598
Effective Institutional Price overcharge per Class Member-academic year resulting from the Challenged Conduct	\$1,485
<b>Aggregate Damages (\$ millions)</b>	<b>\$860.8</b>

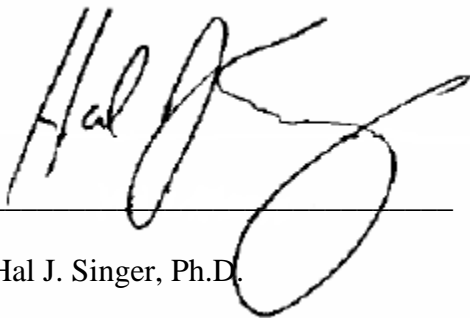
*Notes:* Effective Institutional Price overcharge comes from the conduct coefficient in Table 11, column 6.

### CONCLUSION

282. As detailed in this report, my opinions with respect to the issues I have been asked to investigate are as follows:

1. Common evidence and methods reveal Defendants' collective market power in the relevant antitrust market for academic services that Elite Private Universities provide to undergraduate students.
2. Both qualitative and quantitative evidence in this matter are consistent with each Defendant's participation in the Challenged Conduct and inconsistent with each Defendant acting unilaterally.
3. My common impact analysis provides empirical evidence of anticompetitive effects in the form of artificially inflated Effective Institutional Prices that Class Members at Defendant institutions paid due to the Challenged Conduct. My analysis indicates that artificially inflated Effective Institutional Prices that resulted from the Challenged Conduct harmed all or nearly all Class Members. In addition, record evidence, common to the Class as a whole, indicates that the Challenged Conduct generated anticompetitive effects, increasing Effective Institutional Prices relative to what they would have been absent the Challenged Conduct.
4. Common methods and evidence can be used to quantify the aggregate damages to the Class resulting from the Challenged Conduct. Using standard econometric methods, I calculate that Class Members suffered \$860.8 million in damages by collectively paying Effective Institutional Prices to Defendants that were artificially inflated by the Challenged Conduct.

Respectfully submitted on May 28, 2024,



Hal J. Singer, Ph.D.

## APPENDIX 1: CURRICULUM VITAE



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### Education

Ph.D., The John Hopkins University, 1999; M.A. 1996, Economics

B.S., Tulane University, *magna cum laude*, 1994, Economics. Dean's Honor Scholar (full academic scholarship). Senior Scholar Prize in Economics.

### Current Positions

ECON ONE, Washington, D.C.: Managing Director 2018-present.

UNIVERSITY OF UTAH, ECONOMICS DEPARTMENT, Salt Lake City, UT:  
Professor 2022 - present.

THE UTAH PROJECT, Salt Lake City, UT: Director 2022-present.

### Employment History

GEORGETOWN UNIVERSITY, MCDONOUGH SCHOOL OF BUSINESS,  
Washington, D.C.: Adjunct Professor 2010, 2014, 2016, 2018, 2019, 2020, 2021,  
2022

ECONOMISTS INCORPORATED, Washington, D.C.: Principal 2014-2018.

NAVIGANT ECONOMICS, Washington, D.C.: Managing Director, 2010-2013.

EMPIRIS, L.L.C., Washington, D.C.: Managing Partner and President, 2008-2010.

CRITERION ECONOMICS, L.L.C., Washington, D.C.: President, 2004-2008.  
Senior Vice President, 1999-2004.

LECG, INC., Washington, D.C.: Senior Economist, 1998-1999.

U.S. SECURITIES AND EXCHANGE COMMISSION, OFFICE OF ECONOMIC ANALYSIS, Washington, D.C.: Staff Economist, 1997-1998.

THE JOHNS HOPKINS UNIVERSITY, ECONOMICS DEPARTMENT, Baltimore: Teaching Assistant, 1996-1998.

## Honors

Honoree, Outstanding Antitrust Litigation Achievement in Economics, American Antitrust Institute, *In re Lidoderm Antitrust Litigation*, Oct. 9, 2018.

Finalist, Outstanding Antitrust Litigation Achievement in Economics, American Antitrust Institute, *Tennis Channel v. Comcast*, Dec. 4, 2013.

## Authored Books and Book Chapters

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THE NEED FOR SPEED: A NEW FRAMEWORK FOR TELECOMMUNICATIONS POLICY FOR THE 21ST CENTURY, co-authored with Robert Litan (Brookings Press 2013).

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*The Abuse of Offsets as Procompetitive Justifications: Restoring the Proper Role of Efficiencies After Ohio v. American Express and NCAA v. Alston*, GEORGIA STATE LAW REVIEW (2022), co-authored with Ted Tatos.

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### **Memberships**

American Economics Association

American Bar Association Section of Antitrust Law

### **Reviewer**

Journal of Risk and Insurance

Journal of Competition Law and Economics

Journal of Risk Management and Insurance Review

Journal of Regulatory Economics

Managerial and Decision Economics

Telecommunications Policy



## APPENDIX 2: MATERIALS RELIED UPON

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As cited in the footnotes of this report.

### Depositions

As cited in the footnotes of this report.

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## **Trial Documents**

COFHE-02-2732 Appendix A

IPEDS Data

Roman

Second Amended and Supplemental Class Action Complaint (“Compl.”), ECF No. 308

Story (2001)

## APPENDIX 3: SUMMARY TABLES

APPENDIX 3 TABLE 1: DEFENDANTS' FINANCIAL AID DATA AVAILABILITY AND  
ASSUMED CONDUCT PARTICIPATION YEARS

Defendant	Data Availability	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Brown	Conduct-> Aid Data->							X	X	X	X	X	X	X	X	X												
Caltech	Conduct-> Aid Data->																							X	X	X		
Chicago	Conduct-> Aid Data->		AID	AID	AID	AID	AID	AID	AID	AID	AID	AID	AID	AID	AID	AID	AID	AID	AID	AID	AID	AID	AID	AID	AID	AID	AID	AID
Columbia	Conduct-> Aid Data->							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Cornell	Conduct-> Aid Data->							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Dartmouth	Conduct-> Aid Data->							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Duke	Conduct-> Aid Data->							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Emory	Conduct-> Aid Data->							X	X	X	X	X	X	X	X	X												
Georgetown	Conduct-> Aid Data->							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
JHU	Conduct-> Aid Data->																									X		
MIT	Conduct-> Aid Data->							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Northwestern	Conduct-> Aid Data->							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Notre Dame	Conduct-> Aid Data->							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Penn	Conduct-> Aid Data->							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X					
Rice	Conduct-> Aid Data->							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Vanderbilt	Conduct-> Aid Data->							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
Yale	Conduct-> Aid Data->							X	X	X	X	X										X	X	X	X			

Sources: See workpapers.

APPENDIX 3 TABLE 2: PERCENTAGE OF UNDERGRADUATE INSTITUTIONAL GRANT AID THAT IS MERIT BASED (BY DEFENDANT)

Defendant	% of Institutional Grant Aid that is Merit-Based
Brown	0.1%
Caltech	4.0%
Chicago	16.4%
Columbia	0.7%
Cornell	0.0%
Dartmouth	0.0%
Duke	8.9%
Emory	8.3%
Georgetown	0.2%
Johns Hopkins	6.1%
MIT	0.0%
Northwestern	0.8%
Notre Dame	6.1%
Penn	0.0%
Rice	14.9%
Vanderbilt	11.3%
Yale	0.0%

*Notes:* “% Receiving Merit Based Aid” calculated by averaging the annual percent of institutional grant aid that is merit-based per Defendant where the data is available. Data comes from Common Data Set. *Sources:* 2005-2022 *Common Data Set*, CALTECH, <https://finance.caltech.edu/Resources/cds>; 2021 *Common Data Set*, CHICAGO UNIVERSITY, <https://data.uchicago.edu/common-data-set/>; 2020-2021 *Common Data Set*, DUKE UNIVERSITY, [https://provost-files.cloud.duke.edu/sites/default/files/CDS\\_2021-22\\_FINAL\\_2.pdf](https://provost-files.cloud.duke.edu/sites/default/files/CDS_2021-22_FINAL_2.pdf); 2001-2022 *Common Data Set*, GEORGETOWN UNIVERSITY, <https://oads.georgetown.edu/commondataset/>; 2021-2022 *Common Data Set*, JOHNS HOPKINS UNIVERSITY, <https://oira.jhu.edu/jhu-common-data-set-2022-23/>; 2000-2022 *Common Data Set*, NORTHWESTERN UNIVERSITY, <https://www.enrollment.northwestern.edu/data/common-data-set.html>; 1999-2023 *Common Data Set*, NOTRE DAME, <https://iris.nd.edu/institutional-research/common-data-set-cds/>; 2008-2022 *Common Data Set*, RICE UNIVERSITY, <https://oie.rice.edu/common-data-set/>; 2008, 2013-2022 *Common Data Set*, VANDERBILT UNIVERSITY, <https://www.vanderbilt.edu/dsa/common-data-set/>; 2019-2022 *Common Data Set*, EMORY UNIVERSITY, [https://provost.emory.edu/planning-administration/\\_includes/documents/sections/institutional-data/Emory-Common-Data-Set-2023-2022.pdf](https://provost.emory.edu/planning-administration/_includes/documents/sections/institutional-data/Emory-Common-Data-Set-2023-2022.pdf).

**APPENDIX 4: ALTERNATIVE EFFECTIVE INSTITUTIONAL PRICE REGRESSIONS****APPENDIX 4 TABLE 1: EFFECTIVE INSTITUTIONAL PRICE REGRESSIONS (USING COA MINUS BOTH NEED-BASED AND MERIT-BASED AID)**

	Dependent Variable: <i>Effective Institutional Price</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
	<i>No Student Fixed Effects</i>			<i>Includes Student Fixed Effects</i>		
<b>Conduct</b>	<b>1,007.32***</b>	<b>1,094.21***</b>	<b>1,448.01***</b>	<b>1,014.17***</b>	<b>1,603.96***</b>	<b>1,493.72***</b>
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Adj. Gross Income	11.55	11.52	11.49	1.09	1.08	1.05
	(0.194)	(0.194)	(0.194)	(0.294)	(0.295)	(0.305)
Net Worth	1.36***	1.35***	1.34***	0.38***	0.37***	0.36***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.002)
Number in College	-1,080.29***	-1,071.40***	-1,086.47***	-4,656.04***	-4,665.06***	-4,696.66***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Year in College	1,313.82***	1,297.52***	1,291.53***	1,993.05***	1,750.97***	-612.41***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Student's Gift Aid from Other Sources	-0.38***	-0.38***	-0.38***	0.25***	0.26***	0.25***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Lagged Excess Endowment Investment Returns		1,592.50***	1,271.51***		5,804.91***	6,186.66***
		(0.000)	(0.000)		(0.000)	(0.000)
Inst. Tuition Rev per FTE Undergraduate (1-year lag)		0.05***	0.01***		0.10***	0.03***
		(0.000)	(0.000)		(0.000)	(0.000)
% of FY-FTE Undergrads Receiving Financial Aid		-177.16***	-182.71***		-48.09***	-65.23***
		(0.000)	(0.000)		(0.000)	(0.000)
Unemployment (1-year lag)			-241.76***			-163.05***
			(0.000)			(0.000)
COVID			4,966.33***			3,640.95***
			(0.000)			(0.000)
Trend			307.26***			2,675.15***
			(0.000)			(0.000)
Real GDP			-0.83***			-0.86***
			(0.000)			(0.000)
Observations	726,773	726,773	726,773	726,773	726,773	726,773
R-Squared	0.14	0.14	0.15	0.84	0.84	0.84
Includes Institution Fixed Effects?	Y	Y	Y	Y	Y	Y
Includes Institution*Student Fixed Effects?	N	N	N	Y	Y	Y
Number of Fixed Effects	17	17	17	287,159	287,159	287,159

Notes: Robust p-values in parentheses; \*\*\*p<0.01, \*\*p<0.05, \*p<0.1. Adjusted Gross Income and Net Worth reported in thousands.

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APPENDIX 4 TABLE 2: EFFECTIVE INSTITUTIONAL PRICE REGRESSIONS (LOG-LINEAR MODEL)

	Dependent Variable: $\ln(\text{Effective Institutional Price})$					
	(1)	(2)	(3)	(4)	(5)	(6)
	<i>No Student Fixed Effects</i>			<i>Includes Student Fixed Effects</i>		
<b>Conduct</b>	<b>0.0126***</b> <b>(0.000)</b>	<b>0.0183***</b> <b>(0.000)</b>	<b>0.0247***</b> <b>(0.000)</b>	<b>0.0303***</b> <b>(0.000)</b>	<b>0.0433***</b> <b>(0.000)</b>	<b>0.0438***</b> <b>(0.000)</b>
$\ln(\text{Adj. Gross Income})$	0.1201*** (0.000)	0.1199*** (0.000)	0.1196*** (0.000)	0.0474*** (0.000)	0.0466*** (0.000)	0.0467*** (0.000)
$\ln(\text{Net Worth})$	0.0688*** (0.000)	0.0690*** (0.000)	0.0707*** (0.000)	0.0124*** (0.000)	0.0118*** (0.000)	0.0124*** (0.000)
Number in College	-0.0656*** (0.000)	-0.0660*** (0.000)	-0.0671*** (0.000)	-0.1174*** (0.000)	-0.1174*** (0.000)	-0.1181*** (0.000)
Year in College	0.0420*** (0.000)	0.0427*** (0.000)	0.0437*** (0.000)	0.0471*** (0.000)	0.0409*** (0.000)	-0.0204*** (0.000)
$\ln(\text{Student's Gift Aid from Other Sources})$	-0.0024*** (0.000)	-0.0024*** (0.000)	-0.0025*** (0.000)	0.0078*** (0.000)	0.0079*** (0.000)	0.0076*** (0.000)
Lagged Excess Endowment Investment Returns		-0.0348*** (0.000)	0.0775*** (0.000)		0.1049*** (0.000)	0.1221*** (0.000)
$\ln(\text{Inst. Tuition Rev per FTE Undergraduate (1-year lag)})$		-0.0353*** (0.000)	0.1803*** (0.000)		0.2653*** (0.000)	0.1473*** (0.000)
% of FY-FTE Undergrads Receiving Financial Aid		-0.0054*** (0.000)	-0.0051*** (0.000)		-0.0012*** (0.000)	-0.0016*** (0.000)
Unemployment (1-year lag)			-0.0101*** (0.000)			-0.0057*** (0.000)
COVID			0.1033*** (0.000)			0.0751*** (0.000)
Trend			0.0024*** (0.000)			0.0690*** (0.000)
$\ln(\text{Real GDP})$			-0.7205*** (0.000)			-0.4219*** (0.000)
Observations	726,773	726,773	726,773	726,773	726,773	726,773
R-Squared	0.25	0.25	0.26	0.84	0.84	0.85
Includes Institution Fixed Effects?	Y	Y	Y	Y	Y	Y
Includes Institution*Student Fixed Effects?	N	N	N	Y	Y	Y
Number of Fixed Effects	17	17	17	287,159	287,159	287,159

Notes: Robust p-values in parentheses; \*\*\*p&lt;0.01, \*\*p&lt;0.05, \*p&lt;0.1.

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APPENDIX 4 TABLE 3: EFFECTIVE INSTITUTIONAL PRICE REGRESSIONS (LOG-LINEAR MODEL; USING COA MINUS BOTH NEED-BASED AND MERIT-BASED AID)

	Dependent Variable: <i>ln(Effective Institutional Price)</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
	<i>No Student Fixed Effects</i>			<i>Includes Student Fixed Effects</i>		
<b>Conduct</b>	<b>0.0070***</b> <b>(0.000)</b>	<b>0.0124***</b> <b>(0.000)</b>	<b>0.0193***</b> <b>(0.000)</b>	<b>0.0301***</b> <b>(0.000)</b>	<b>0.0436***</b> <b>(0.000)</b>	<b>0.0437***</b> <b>(0.000)</b>
ln(Adj. Gross Income)	0.1213*** (0.000)	0.1211*** (0.000)	0.1208*** (0.000)	0.0475*** (0.000)	0.0467*** (0.000)	0.0468*** (0.000)
ln(Net Worth)	0.0696*** (0.000)	0.0699*** (0.000)	0.0718*** (0.000)	0.0126*** (0.000)	0.0119*** (0.000)	0.0125*** (0.000)
Number in College	-0.0665*** (0.000)	-0.0669*** (0.000)	-0.0680*** (0.000)	-0.1181*** (0.000)	-0.1181*** (0.000)	-0.1188*** (0.000)
Year in College	0.0412*** (0.000)	0.0418*** (0.000)	0.0430*** (0.000)	0.0451*** (0.000)	0.0386*** (0.000)	-0.0227*** (0.000)
ln(Student's Gift Aid from Other Sources)	-0.0026*** (0.000)	-0.0026*** (0.000)	-0.0028*** (0.000)	0.0077*** (0.000)	0.0078*** (0.000)	0.0075*** (0.000)
Lagged Excess Endowment Investment Returns		-0.0379*** (0.000)	0.0912*** (0.000)		0.1097*** (0.000)	0.1252*** (0.000)
ln(Inst. Tuition Rev per FTE Undergraduate (1-year lag))		-0.0393*** (0.000)	0.2176*** (0.000)		0.2766*** (0.000)	0.1547*** (0.000)
% of FY-FTE Undergrads Receiving Financial Aid		-0.0051*** (0.000)	-0.0047*** (0.000)		-0.0013*** (0.000)	-0.0016*** (0.000)
Unemployment (1-year lag)			-0.0116*** (0.000)			-0.0063*** (0.000)
COVID			0.1018*** (0.000)			0.0759*** (0.000)
Trend			0.0019*** (0.002)			0.0676*** (0.000)
ln(Real GDP)			-0.7861*** (0.000)			-0.3576*** (0.000)
Observations	726,773	726,773	726,773	726,773	726,773	726,773
R-Squared	0.25	0.25	0.25	0.85	0.85	0.85
Includes Institution Fixed Effects?	Y	Y	Y	Y	Y	Y
Includes Institution*Student Fixed Effects?	N	N	N	Y	Y	Y
Number of Fixed Effects	17	17	17	287,159	287,159	287,159

Notes: Robust p-values in parentheses; \*\*\*p&lt;0.01, \*\*p&lt;0.05, \*p&lt;0.1.

**APPENDIX 5: INSTITUTIONAL GRANT AID REGRESSIONS**

283. Here, I report results when applying the same regression models as those used in Part III.A using institutional grant aid as the dependent variable, rather than Effective Institutional Price. I report such results as a sensitivity test. Ultimately, prospective students and their parents focus on the price they have to pay for an education, hence the Department of Education's requirement of a net price calculator. The conduct coefficient in regressions using Effective Institutional Price capture the effect of any element of the Challenged Conduct on the outcome of interest. The effect of the Challenged Conduct on institutional grant aid reflects only an intermediary impact. Students and parents compare their out-of-pocket costs across schools rather than the relative amount of institutional grant aid. Nonetheless, I would expect that the Challenged Conduct would primarily affect institutional grant aid, thus affecting Effective Institutional Prices, motivating my decision to conduct this sensitivity analysis.

284. To assess the effect of the Challenged Conduct on institutional grant aid, I use the same "conduct" variable as used in my Effective Institutional Price regressions based on the record evidence of when each Defendant participated in the Challenged Conduct. I provide a timeline of each Defendant's participation in Appendix 3 Table 1. For each regression, I regress the level of institutional grant aid on the conduct variable and control variables, all of which enter the model in levels, meaning that their coefficients can be interpreted as unit changes.<sup>371</sup>

285. Appendix 5 Table 1 provides the results of these regressions. Column (1) is a regression of institutional grant aid on the conduct variable, with student-level control variables and institution fixed effects. In column (2), I add institution level control variables. In column (3), I add macroeconomic control variables. In columns (4)-(6), I run the same regressions but using student

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371. I include a tuition CPI variable in these regressions to account for changes in cost of attendance over time.



fixed effects. In column 6, I show that the Challenged Conduct resulted in a \$978 reduction in institutional grant aid per Class Member-academic year. The p-value on the conduct coefficient in every model specification is less than 0.01, meaning the results are highly statistically significant.

286. The conduct coefficient and explanatory variable coefficients are economically and statistically significant, meaning they are non-trivial in magnitude and highly unlikely due to random chance.<sup>372</sup> In the bottom three rows, I report the total observations, R-squared, and the number of fixed effects. In total, the regression dataset contains approximately 727 thousand observations, each of which is a Class Member during a given academic year. There are over 287 thousand Class Member-academic year combinations in total.<sup>373</sup> The R-squared measures how well the model explains variation in a student's institutional grant aid.<sup>374</sup> It is equal to 0.86, implying that the regression model is highly predictive of institutional grant aid.

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372. I use the term “statistically significant” to mean statistically significant at a five percent significance level, as is commonplace in economics. Economists consider both economic significance and statistical significance when interpreting results. Economic significance pertains to the overall size and sign of the coefficient. Statistical significance means that it is highly unlikely that the true value of the variable is equal to zero given such a large coefficient. WOOLDRIDGE at 135-136 (“Because we have emphasized statistical significance throughout this section, now is a good time to remember that we should pay attention to the magnitude of the coefficient estimates in addition to the size of the t statistics. The statistical significance of a variable  $x_j$  is determined entirely by the size of  $t_{\hat{\beta}_j}$ , whereas the economic significance or practical significance of a variable is related to the size (and sign) of  $\hat{\beta}_j$ . [] Too much focus on statistical significance can lead to the false conclusion that a variable is “important” for explaining  $y$  even though its estimated effect is modest.”).

373. Since some Defendants did not produce data for the full Class Period, this is less than the total number of Class Members. For example, Cornell participated in the Challenged Conduct from 2003-2022, but only produce financial aid data starting in 2008.

374. See, e.g., WOOLDRIDGE at 38.

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APPENDIX 5 TABLE 1: INSTITUTIONAL GRANT AID REGRESSIONS

	Dependent Variable: <i>Institutional Grant Aid</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
	<i>No Student Fixed Effects</i>			<i>Includes Student Fixed Effects</i>		
<b>Conduct</b>	<b>-502.38***</b>	<b>-625.52***</b>	<b>-1,780.32***</b>	<b>-333.93***</b>	<b>-622.52***</b>	<b>-978.43***</b>
	<b>(0.000)</b>	<b>(0.000)</b>	<b>(0.000)</b>	<b>(0.000)</b>	<b>(0.000)</b>	<b>(0.000)</b>
Adj. Gross Income	-11.42	-11.41	-11.43	-1.05	-1.04	-1.02
	(0.193)	(0.193)	(0.193)	(0.295)	(0.296)	(0.305)
Net Worth	-1.32***	-1.32***	-1.32***	-0.38***	-0.37***	-0.36***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.002)
Number in College	1,092.17***	1,101.36***	1,109.66***	4,682.18***	4,691.61***	4,695.76***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Year in College	-1,319.51***	-1,320.88***	-1,342.82***	-1,412.30***	-1,321.20***	353.54***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Student's Gift Aid from Other Sources	0.38***	0.38***	0.38***	-0.24***	-0.24***	-0.25***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Lagged Excess Endowment Investment Returns		-669.66***	-4.53		-4,117.71***	-4,010.88***
		(0.000)	(0.972)		(0.000)	(0.000)
Inst. Tuition Rev per FTE Undergraduate (1-year lag)		0.03***	0.05***		-0.02***	0.02***
		(0.000)	(0.000)		(0.000)	(0.000)
% of FY-FTE Undergrads Receiving Financial Aid		88.02***	76.00***		13.68***	13.39***
		(0.000)	(0.000)		(0.003)	(0.005)
Unemployment (1-year lag)			118.94***			377.39***
			(0.000)			(0.000)
COVID			-1,757.22***			-1,780.59***
			(0.000)			(0.000)
Trend			-1,272.67***			-2,692.87***
			(0.000)			(0.000)
Real GDP			0.81***			0.23**
			(0.000)			(0.014)
Tuition CPI	45.25***	43.69***	80.48***	17.44***	17.64***	56.83***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	726,773	726,773	726,773	726,773	726,773	726,773
R-Squared	0.24	0.24	0.24	0.85	0.86	0.86
Includes Institution Fixed Effects?	Y	Y	Y	Y	Y	Y
Includes Institution*Student Fixed Effects?	N	N	N	Y	Y	Y
Number of Fixed Effects	17	17	17	287,159	287,159	287,159

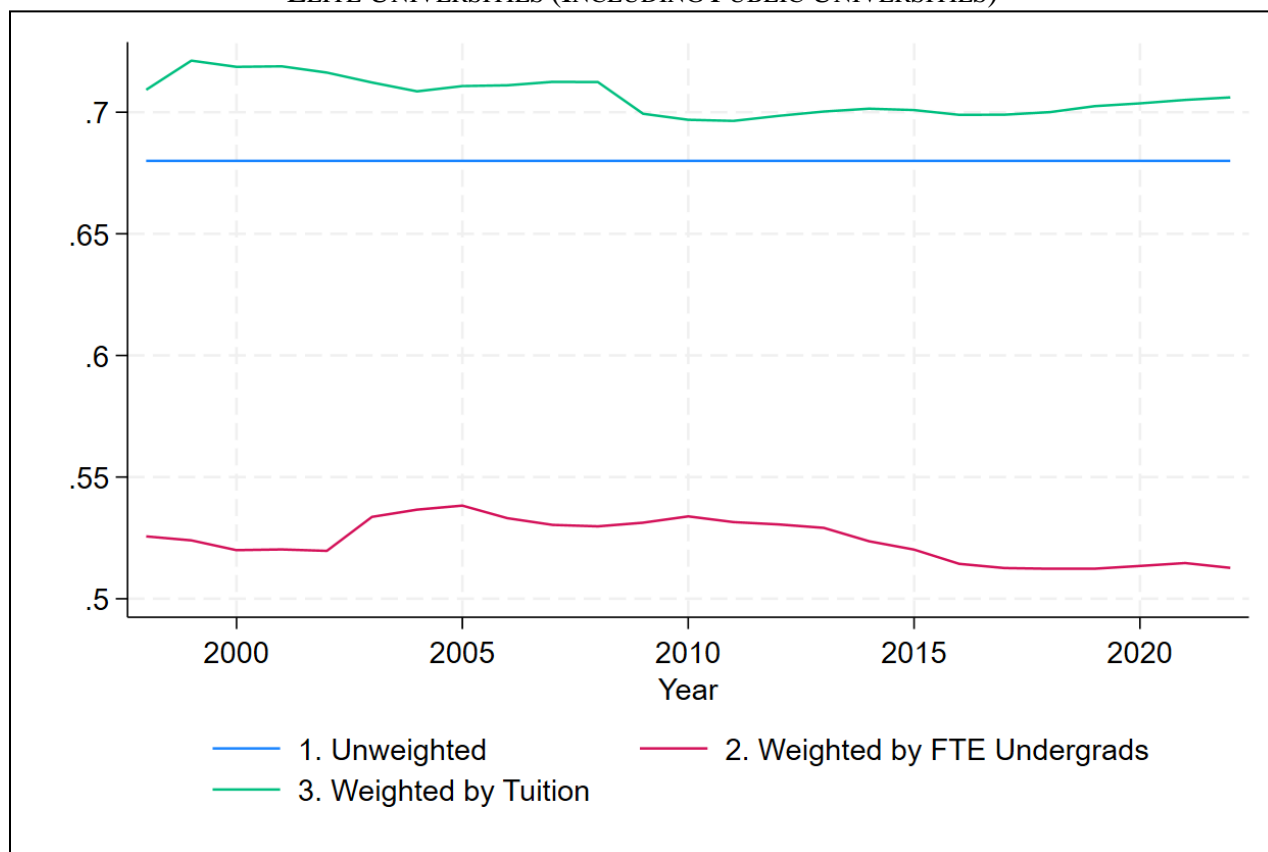
Notes: Robust p-values in parentheses; \*\*\*p<0.01, \*\*p<0.05, \*p<0.1.

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APPENDIX 5 TABLE 2: INSTITUTIONAL GRANT AID REGRESSIONS (INCLUDING BOTH NEED-BASED AND MERIT-BASED AID)

	Dependent Variable: <i>Institutional Grant Aid</i>					
	(1)	(2)	(3)	(4)	(5)	(6)
	<i>No Student Fixed Effects</i>			<i>Includes Student Fixed Effects</i>		
<b>Conduct</b>	<b>-273.29***</b>	<b>-368.98***</b>	<b>-1,640.71***</b>	<b>-396.51***</b>	<b>-721.35***</b>	<b>-1,096.68***</b>
	<b>(0.000)</b>	<b>(0.000)</b>	<b>(0.000)</b>	<b>(0.000)</b>	<b>(0.000)</b>	<b>(0.000)</b>
Adj. Gross Income	-11.45	-11.45	-11.46	-1.05	-1.04	-1.03
	(0.194)	(0.194)	(0.195)	(0.295)	(0.296)	(0.306)
Net Worth	-1.34***	-1.34***	-1.33***	-0.37***	-0.36***	-0.35***
	(0.000)	(0.000)	(0.000)	(0.002)	(0.002)	(0.003)
Number in College	1,098.18***	1,104.65***	1,114.46***	4,698.52***	4,707.80***	4,710.72***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Year in College	-1,270.79***	-1,273.70***	-1,296.00***	-1,465.76***	-1,364.84***	455.32***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Student's Gift Aid from Other Sources	0.40***	0.39***	0.39***	-0.24***	-0.24***	-0.24***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Lagged Excess Endowment Investment Returns		-1,068.46***	-400.28***		-4,334.15***	-4,074.55***
		(0.000)	(0.002)		(0.000)	(0.000)
Inst. Tuition Rev per FTE Undergraduate (1-year lag)		0.02***	0.04***		-0.03***	0.02***
		(0.000)	(0.000)		(0.000)	(0.000)
% of FY-FTE Undergrads Receiving Financial Aid		77.29***	61.38***		16.49***	14.33***
		(0.000)	(0.000)		(0.000)	(0.002)
Unemployment (1-year lag)			166.08***			395.46***
			(0.000)			(0.000)
COVID			-1,639.73***			-1,750.05***
			(0.000)			(0.000)
Trend			-1,386.76***			-2,856.67***
			(0.000)			(0.000)
Real GDP			0.94***			0.08
			(0.000)			(0.365)
Tuition CPI	46.28***	45.93***	85.48***	23.67***	24.13***	66.30***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	726,773	726,773	726,773	726,773	726,773	726,773
R-Squared	0.23	0.23	0.23	0.86	0.86	0.86
Includes Institution Fixed Effects?	Y	Y	Y	Y	Y	Y
Includes Institution*Student Fixed Effects?	N	N	N	Y	Y	Y
Number of Fixed Effects	17	17	17	287,159	287,159	287,159

Notes: Robust p-values in parentheses; \*\*\*p&lt;0.01, \*\*p&lt;0.05, \*p&lt;0.1.

**APPENDIX 6: ALTERNATIVE MARKET DEFINITION THAT INCLUDES ELITE PUBLIC UNIVERSITIES****APPENDIX 6 FIGURE 1: DEFENDANTS' COLLECTIVE MARKET SHARE OF THE USNWR TOP 25 ELITE UNIVERSITIES (INCLUDING PUBLIC UNIVERSITIES)**

Source: IPEDS Data; US News and World Report.

**APPENDIX 7: SUMMARY OF ADDITIONAL EVIDENCE, BY DEFENDANT**

287. I summarize below exemplary evidence of each Defendant's participation in the Challenged Conduct. I first address the 568 Group members who remained members during the entire Class Period (Cornell, Columbia, Dartmouth, Duke, Georgetown, MIT, Northwestern, Notre Dame), and then address the members who either left or joined the 568 Group during the Class Period (Brown, Caltech, Chicago, Emory, Johns Hopkins, Penn, Rice, Vanderbilt, Yale). Finally, I also address the evidence regarding certain non-Defendant Elite Private Universities that did not become 568 Group members.

**A. Evidence as to 568 Group Members During the Entire Class Period****1. Columbia**

288. In a 2010 internal document assessing how to save money on financial aid, Columbia noted that its "[m]embership in the 568 Presidents' Group commits us to certain of need analysis principles which determine parental contribution (PC)."<sup>375</sup> Columbia's former Director of Financial Aid Kathryn Tuman testified as to the 568 Group: "The goal was to come up with agreed-upon best practices."<sup>376</sup> Columbia wanted to reduce financial aid expenses, acknowledging that "we also continue to adjust some of the admissions 'levers.'"<sup>377</sup>

289. Columbia executed the 568 Group MOUs.<sup>378</sup> Columbia recognized that "Membership in the 568 Presidents' Group commits us to a certain number of needs analysis principles which determine parental contribution. (PC)."<sup>379</sup> Columbia thus agreed to apply the Core Principles and to use the Base IM/CM. Dean Marinaccio testified: "You have a choice as to whether

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375. Columbia\_00016697.

376. Tuman 94:23-24, 94:12-24, 132:7-21, 110:1-6.

377. Columbia\_00016951.

378. *E.g.*, Columbia\_00274722.

379. Marinaccio Ex. 22 (Columbia\_00238825 at -829).

or not – or (sic) to adopt the consensus approach, and we have adopted it.”<sup>380</sup> Columbia stated in the DOJ’s investigation of the 568 Group: “Columbia College and SEAS have adopted the Consensus Approach as part of their methodology for calculating a family’s parental contribution to the cost of attendance.”<sup>381</sup>

290. Columbia’s former Director of Financial Aid Tuman testified that the Core Principles were consistent with Columbia’s overall objectives.<sup>382</sup> She testified as to methodology: “We used IM methodology but with certain Columbia settings on it.”<sup>383</sup> Columbia’s Director of Financial Aid Michael Hall communicated with Dean Marinaccio in 2021 as to whether changes to IM and deviation from Base IM were necessary to be a member of 568, and whether Columbia had to use IM, which documents reflect that Hall believed it did.<sup>384</sup> Columbia described its IM as “Equitable,” “Economically Sound,” “Comprehensive – captures all sources of income and assets,” and “Used by all members of the 568 Presidents Group.”<sup>385</sup>

291. Columbia participated in the activities of the 568 Group. Columbia’s former Director of Financial Aid Tuman and her successor, Michael Hall, regularly attended 568 Group meetings.<sup>386</sup> Tuman served as Columbia’s liaison to the 568 Technical Committee.<sup>387</sup> Tuman was involved in the planning for a home equity session at the 568 Group retreat in 2015 and was involved in drafting language for the Consensus Agreement regarding home equity.<sup>388</sup>

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380. Marinaccio 375:2-5.

381. Marinaccio Ex. 24 at RFI No. 4.

382. Tuman 143:19-144:2.

383. *Id.* at 137:20-21, 138:7-16, 141:5-6.

384. Columbia\_00053516 at -517.

385. Hall Ex. 7 at 3.

386. Tuman Ex. 7 (2010), Ex. 9 (2014), Ex. 10 (2015); Hall 103:25-104:7 (“between 12 and 15-ish”); Hall 104:23-24; Hall Ex. 4 at 5 (2016); Hall Ex. 11 (2018); Columbia\_00301322 (2020); Columbia\_00263570 (2021).

387. Columbia\_00301336; Columbia\_00140327 at -330.

388. Columbia\_00187847.

## 2. Cornell

292. Cornell's Deputy Director of Financial Aid testified that "one of the goals" of the 568 Group was "to establish a consistent methodology in terms of the needs analysis and the approach that [it was] taking."<sup>389</sup> Thus, during 568 Group meetings, members "were attempting to reach a consensus among your peer schools on what a fair and equitable methodology would look like."<sup>390</sup> In other words, the schools "were agreeing on the principles around needs analysis."<sup>391</sup> This included, for example, "agreeing that maybe capping home equity at two times the total income is the best approach to recognizing that parents have an asset, but it's not as liquid."<sup>392</sup>

293. Cornell understood that when it joined the 568 Group, "it was going to impact [Cornell's] needs analysis."<sup>393</sup> "Some of the pieces of the consensus approach were adopted" by Cornell in 2002 after it joined the 568 Group.<sup>394</sup>

294. Cornell executed the 568 Group MOUs.<sup>395</sup> Cornell in fact agreed with, and applied, all of the Core Principles, as listed in the Consensus Methodology Policy Guidelines Manual.<sup>396</sup> In 2008, in response to an inquiry regarding its practices, Cornell reported to Congress that a "family's contribution toward educational costs is determined by using the 568 Presidents' Group *Consensus Approach* methodology."<sup>397</sup>

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389. Maxson 154:6-11.

390. *Id.* 363:23-364:3.

391. *Id.* 164:5-7.

392. *Id.* 164:9-13.

393. *Id.* 56:15-17.

394. *Id.* 120:6-9; *see also id.* 57:15-22.

395. *See, e.g.*, CORNELL\_LIT0000365241; CORNELL\_LIT0000108809.

396. Maxson 278:20-282:23.

397. CORNELL\_LIT0000100841 at -847.

295. In 2010, Cornell cited “the same Section 568 (Consensus Approach) formula to determine parent contributions that we use,”<sup>398</sup> “our consensus approach to need analysis,”<sup>399</sup> and “the 568 group which defines a formula for us to use.”<sup>400</sup> In 2012, Cornell stated that it “uses the College Board’s Institutional Methodology, modified by adjustments agreed on by the 568 Presidents’ Group of schools.”<sup>401</sup> In 2015, Cornell said it “belong[s] to the 568 group which has a common approach.”<sup>402</sup> In 2019, Cornell procedures stated that “Cornell University’s financial aid policy begins with the premise that the student’s family is primarily responsible for paying the cost of higher education” and that it “use[s] both the Consensus Approach (CA) and Federal Methodology (FM) formulas to calculate the Parent and Student Contributions.”<sup>403</sup> In 2018, Cornell stated that its “Practice of Adding Losses to Income is actually part of the consensus methodology agreed upon by the 568 institutions.”<sup>404</sup>

296. Cornell regularly attended the 568 Group meetings. Cornell’s Director of Financial Aid and several of his “colleagues, other members of [his] staff” would attend as well.<sup>405</sup> Cornell’s Deputy Director of Financial Aid testified that when she attended such meetings, as an Associate Director, she “liked attending,” and thought “an important component” was the opportunity “to hear what other schools were doing.”<sup>406</sup>

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398. CORNELL\_LIT0000120783.

399. CORNELL\_LIT0000230307.

400. CORNELL\_LIT0000149131.

401. CORNELL\_LIT0000351496.

402. CORNELL\_LIT0000167239.

403. CORNELL\_LIT0000272526.

404. CORNELL\_LIT0000023992.

405. Keane 31:7-32:24; Maxson 122:20-24.

406. Maxson 360:11-363:14.



297. Cornell used the Base IM as a starting part for its need calculations.<sup>407</sup> Cornell's financial aid software "gives [it] what [it] would call institutional methodology with options."<sup>408</sup> But "[w]ith respect to the parent contribution calculation," Cornell understood that the 568 Group further "define[d] a formula for [it] to use."<sup>409</sup> This included the "Practice of Adding Losses to Income," which it understood was "part of the consensus methodology agreed upon by the 568 institutions,"<sup>410</sup> as well as "limit[ing] home equity to 1.2 times family income."<sup>411</sup>

### 3. Dartmouth

298. Dartmouth's Dean of Admissions and Financial Aid at the time Dartmouth joined the 568 Group stated that the 568 Group's purpose included deriving realistic family contributions and avoiding bidding wars for students.<sup>412</sup> He further stated that in the early 200s, Dartmouth found the FM did not create realistic family contributions and that need calculated by the FM was higher than the IM and would cost Dartmouth significantly more to adopt compared to the IM or CM.<sup>413</sup>

299. Internal documents reflect Dartmouth employees assessing the cost of applying the CM, but stating Dartmouth could still participate in the 568 Group without fully implementing the CM so long as Dartmouth committed that the CM calculation would be the "lowest" contribution that would be expected of a family.<sup>414</sup> According to that same document, Dartmouth was considered to be a "participating school" in the 568 Group under that standard.<sup>415</sup>

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407. Kotlikoff Rule 30(b)(6) Dep. 31:14-17.

408. Maxson 70:13-71:6.

409. CORNELL\_LIT0000149131 at -132.

410. CORNELL\_LIT0000023992.

411. CORNELL\_LIT0000116174 at -175.

412. Furstenberg 137:9-138:1, 127:23-128:14; DARTMOUTH\_0000359371 at -527 (describing the stated purpose of the CM during a 568 Group meeting), at -531 (restating the same "avoid bidding wars" purpose of the CM from an even earlier 568 Group meeting).

413. Furstenberg 208:15-210:6.

414. DARTMOUTH\_0000359371 at -379.

415. *Id.*

300. Dartmouth's longtime Director of Financial Aid regularly attended 568 Group meetings, including early meetings of the Working Group, and wrote memoranda summarizing the meetings to her boss, the Dean of Admissions and Financial Aid.<sup>416</sup> And Dartmouth ultimately did apply the Core Principles,<sup>417</sup> signed the MOUs,<sup>418</sup> and used the IM to calculate EFC.<sup>419</sup> Dartmouth conveyed to Congress in connection with the GAO Report that it valued the 568 Group because it could "reach agreement" on needs analysis issues as the 568 Group did not reflect such a "wide range of schools" but was limited to the schools that had the "luxury" to do the right thing.<sup>420</sup>

#### 4. Duke

301. Internal Duke training materials describe the 568 Group as addressing "award[ing] aid only on the basis of demonstrated financial need" and "us[ing] common principles of analysis for determining the needs of students."<sup>421</sup>

302. In 2016, a Duke employee circulated internally a 568 Group presentation describing the purposes of the group as being to "[d]iscuss and agree upon common principles of analysis for determining the financial need of undergraduate financial aid applications" and "[b]uild, maintain, and revise, as appropriate, a Consensus Approach need analysis methodology that is consistent with these principles."<sup>422</sup> In 2018, a Duke employee received a copy of a presentation on the CM at a 568 Group meeting, which described its purpose as being to "[r]educ[e] the variance in need analysis results across institutions through consistent application of these common standards."<sup>423</sup>

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416. Furstenberg 99:12-14; 125:7-20; *see, e.g.*, DARTMOUTH\_0000359371 at -379.

417. Furstenberg 155:15-158:17.

418. *See, e.g.*, DARTMOUTH\_0000097534; DARTMOUTH\_0000346951.

419. Coffin 48:3-5.

420. DARTMOUTH\_0000082031 at -035.

421. DUKE568\_0019856 at -857.

422. DUKE568\_0052450 at -453.

423. DUKE568\_0052962 at -962\_0002.

303. Witnesses have testified that Duke agreed with all the Core Principles as listed in the Consensus Methodology Policy Guidelines Manual.<sup>424</sup> The Guiding Principles of Duke's Financial Aid Policies and Procedures stated: "Duke, like many similar institutions uses the 568 Presidents' Group Consensus Approach to Needs Analysis to determine each student's family contribution."<sup>425</sup>

304. Duke attended the 568 Group meetings and has stated that doing so was important.<sup>426</sup> In a 2013 email, for example, Duke's Vice Provost and Director of Financial Aid told financial aid staff she "was looking through the new and revised 568 Consensus Methodology Guidelines and [thought] it would be helpful" for them "to go over what was covered" in an upcoming meeting, and that it "should give [them] an idea of what other schools are doing, or can afford to do, and what they are not."<sup>427</sup> Meeting presentations would be circulated internally.<sup>428</sup>

305. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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424. McCall 205:10-212:10; Coleman 71:9-74:10.

425. DUKE568\_0081152 at -395.

426. Duke 1st ROG Response No. 1.

427. DUKE568\_0147431.

428. *See, e.g.*, DUKE568\_0052450.

429. DUKE568\_0114522.

430. Duke 1st ROG Resp. No. 9.

431. DUKE568\_0127175 at -176.

306. In 2008, Duke's financial aid director told other 568 Group members that Duke "use[s] the Consensus Approach in **all** cases...no exceptions are made."<sup>432</sup> Duke has also said it "utilize[s] College Board's (CB) base formula with [Duke's] own tweaks and adjustment to create Duke's institutional methodology."<sup>433</sup> But Duke's modifications were themselves substantially informed by the 568 Group's CM, to the extent that its policies and procedures instructed employees to select the "568 Rules" option in the College Board's Institutional Needs Analysis System, explaining it was "what [the undergraduate school] used the most."<sup>434</sup>

307. [REDACTED]

[REDACTED]

[REDACTED],<sup>435</sup> the percentage of Pell grant recipients at peer

schools, competitors' financial aid data, matriculation rates for financial aid recipients, and competitors' financial aid data.<sup>436</sup> Duke would perform "annual aid analyses by income" and would use COFHE redbook data to analyze "head to head competition by aid treatment."<sup>437</sup>

## 5. Georgetown

308. Georgetown's President John DeGioia, who was the Chair of the 568 Group from 2009 until its 2022 dissolution, admitted to *The Georgetown Voice* in 2014 that the 568 exemption enabled Georgetown and the other 568 Group members to "develop a common formula by which we would access [sic] the need of the student. We ask the family to contribute the maximum that they are capable of, according to the formula."<sup>438</sup>

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432. ND\_0006828 (emphasis and ellipsis in original).

433. DUKE568\_0019856 at -857; *see also* McCall 64:20-23 (every year, since she has been at Duke, there have been changes to Duke's IM because of changes to the Base IM).

434. DUKE568\_0081152 at -169.

435. McCall at 90:15-91:14.

436. *Id.* at 149:11-152:11; DUKE568\_0108207; DUKE568\_0055377 at -377-78; DUKE568\_0032563.

437. DUKE568\_0053664; *see also* DUKE568\_0103192; DUKE568\_0061261; DUKE568\_0055625.

438. DeGioia Ex. 13.

309. According to Georgetown’s Dean of Student Financial Services, Patricia McWade, 568 Group members came together to see if they “could agree on how to analyze families’ ability to pay.”<sup>439</sup> Georgetown affirmed in 2019 that using the CM “[e]stablishes consistent treatment of families in like circumstances” and “[a]ttempts to lessen variances in the resulting need analysis among 568 institutions.”<sup>440</sup> McWade—who was also the head of the 568 Group’s Technical Committee—testified that after the 568 exemption expired, “we’re going back to the Wild Wild West where schools would do . . . what they wanted and very different things.”<sup>441</sup>

310. Georgetown affirmed in 2003 that when it “signed on as a CA school, we agreed to use the same need analysis methodology as the other 27 schools.”<sup>442</sup> When it joined the 568 Group for 2003-04, Georgetown “agreed to use the new ‘consensus approach’ to need analysis because we believed it would more accurately reflect the families’ ability to pay for a college education.”<sup>443</sup>

311. Georgetown executed the 568 Group MOUs.<sup>444</sup> Georgetown’s Assistant Dean for Research and Planning Matt Lewis testified that his understanding of the CA is that “among the schools in 568, that there are common . . . principles to apply to the determination of need.”<sup>445</sup>

312. McWade testified that the CM was a “formula” that Georgetown used and still uses.”<sup>446</sup> Georgetown’s Office of Student Financial Services Policies and Procedures Manual for 2020-2021 contains the following guidance: “Consensus Approach Methodology - Georgetown University uses the Presidents’ 568 Working Group Consensus Approach methodology (CA), with

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439. McWade 190:18-21.

440. GTWNU\_0000000278.

441. McWade 190:21-191:4.

442. GTWNU\_0000071253.

443. GTWNU\_0000324155.

444. GTWNU\_0000324131; GTWNU\_0000291558.

445. Lewis 130:21-24.

446. McWade 105:8-106:3.

modifications, to determine financial need for our institutional scholarship funds.”<sup>447</sup> Matt Lewis, the Chief of Staff at the Office of the Dean until 2020, testified: “We apply the principle that we take the cost of attendance, and then we subtract the expected family contribution and any outside resources that may be applied, and that is the student’s need. And that is what . . . the aid package is based upon.”<sup>448</sup>

313. Georgetown participated and took leadership positions in the 568 Group. Georgetown President DeGioia, as noted, was the Chair of the 568 Group from 2009 until its dissolution in 2022. Georgetown regularly attended the 568 Group meetings,<sup>449</sup> and participated in the 568 Working Group after its inception in the 1990s<sup>450</sup>

314. Georgetown analyzed COFHE color book data regarding Tuition and Institutional Aid during the Class Period for purposes of comparison with peer schools. McWade concluded, for example, Georgetown was “not competitive when it comes to financial aid, even though the CA has mitigated the negativity somewhat” and stated: “We will be looking at the freshmen data for the COFHE Bluebook submission this week so I will have a better handle on the families' income, etc.”<sup>451</sup> Lewis testified that “one of the items that I may refer often to from the Brownbook is our percentage of scholarship funded by endowments and gifts and restricted sources, because we tend to lag very far behind our other COFHE schools, and it's hamstrung us over time.”<sup>452</sup>

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447. GTWNU\_0000185821 at -864.

448. Lewis 39:4-19.

449. GTWNU\_0000280504; GTWNU\_0000280522; GTWNU\_0000241564; GTWNU\_0000322490; GTWNU\_0000022546.

450. GTWNU\_0000373323.

451. GTWNU\_0000071253.

452. Lewis 113:9-19.

## 6. MIT

315. MIT was involved in the creation of the 568 Group.<sup>453</sup> Senior MIT officials, including Chancellor Larry Bacow and Senior Associate Dean Stanley Hudson attended the 568 Presidents' Working Group Meeting in 1999.<sup>454</sup> MIT cited "especially the elimination of home equity in FM, competitive pressures, and concerns associated with the 1992 Department of Justice antitrust lawsuit against Ivy League institutions" as factors that "contributed to the need for a consensus approach to determining family contributions."<sup>455</sup>

316. MIT signed the MOUs.<sup>456</sup> Documents and testimony reflect that MIT considered that less generous policies put it at a competitive disadvantage with those schools as families considered affordability when deciding where a child should go to college.<sup>457</sup>

317. MIT used the CM with some modifications.<sup>458</sup>

318. MIT extensively participated in the activities of the 568 Group. MIT's Director of Student Financial Services, Leslie Bridson, began working at MIT in 2003 and became involved in the 568 Group not long afterward.<sup>459</sup> Bridson regularly presented or led substantive discussions at

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453. COFHE-02-00013384 at -388; Hicks Ex. 5 at -252.

454. COFHE-02-00009143 at -144-145.

455. Hicks Ex. 4 at -950; *see also* Hicks Ex. 2 ("Besty Hicks, still wearing her fed hat a bit, worried about whether or not we could truly create a consensus methodology. She remembered the variance that occurred prior to overlap (OOPS, there is that word) and was concerned that our group's results would continue to reflect too much variance. (Joe reminded her that the variances were usually minor—particularly by comparison to today's variations.) By the end of our conversation, though, Betsy indicated that she thought this was a good effort and one that MIT would almost certainly support.").

456. *See, e.g.*, MITLIT-000637827; MITLIT-000642 ("MIT is free to choose any methodology to award its own financial aid and uses the Consensus Approach to Need Analysis Methodology (CA). Approximately thirty private colleges and universities use CA which is based on the Institutional Methodology (IM) developed by the College Scholarship Service, but includes commonly agreed upon standards for dealing with certain circumstances."); *see also* MITLIT-000238129; Hicks Ex. 15 at -091-92.

457. MITLIT-000073348; Hicks 168:19-170:8, 182:17-183:10.

458. *See, e.g.*, MITLIT-000226347 at -356; MITLIT-000171438 at -453; MITLIT-000083043; MITLIT-000238091.

459. Bridson 16:5-17:11.

568 meetings.<sup>460</sup> Bridson also served on the 568 Technical Committee, described as “the general decision-making body of the group,” for nearly ten years and was the Vice Chair when that body ceased meeting due to this lawsuit.<sup>461</sup>

319. MIT supported lobbying efforts for reauthorization of the 568 exemption.<sup>462</sup>

320. MIT regularly used COFHE colorbook data regarding tuition and institutional financial aid to compare itself with its peer schools—primarily Harvard, Princeton, Yale, and Stanford.<sup>463</sup> MIT used COFHE data to inform decision-making on tuition and fees and financial aid policies.<sup>464</sup> Internal documents describe COFHE data as highly sensitive, particularly when MIT was associating data with a particular school identified by name.<sup>465</sup>

## 7. Northwestern

321. While the President of Northwestern, Morton Schapiro was the Vice Chair of the 568 Group.<sup>466</sup> As Vice Chair, he lobbied Congress for renewal of the antitrust exemption so the Group could continue to meet.<sup>467</sup> Dr. Schapiro brought documents to meetings with Congress about the value of the Section 568 antitrust exemption to meetings and the 568 Group, explaining that the Group developed a CM that “provide[d] for the consistent treatment of families in like

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460. *See, e.g.*, MITLIT-000381769; DARTMOUTH\_0000007687; COFHE-02-00016677 at -692; COFHE-02-00012920 at -921; NULIT-0000070345 at -346.

461. MITLIT-000652859 at -652859-860; Bridson 16:15-26:6.

462. *See* MITLIT-000026603; YALE\_LIT\_0000123549 at -549-551; MITLIT-000010922; GTWNU\_0000293528.

463. *See* Schmill 51:16-24; *see also* MITLIT-000109547; Lesar 49:20-23; MITLIT-000067833; Lesar Ex. 6; Lesar Ex. 7; MITLIT-000011044 at -11046-051; MITLIT-000013555 at -564-566.

464. *See, e.g.*, MITLIT-000018733 at -735-747; MITLIT-000070117 at -119-144.

465. *See* MITLIT-000109547; MITLIT-000109547.

466. COFHE-02-00010409 at -413.

467. *See* Schapiro Ex. 4; Schapiro Ex. 5; GTWNU\_293467 at -71 (stating that Jack DeGioia and Morton Schapiro were “both fully supportive about moving forward with renewal” and President Schapiro “offered to help in whatever ways he could, including going to the Hill”).



circumstances.”<sup>468</sup> Dr. Schapiro’s talking points for a 2014 senator meeting stated that Northwestern “strongly support[s] an extension of the [Section 568] antitrust exemption.”<sup>469</sup>

322. When it joined the 568 Group, Northwestern stated that it “entered into an agreement with a number of our COFHE colleagues to use [the CM] so that a determination of family contributions would be more consistent.”<sup>470</sup> Northwestern signed the 568 Group’s MOUs.<sup>471</sup> In internal documents Northwestern officials state that participation in the 568 Group required it to use of all parts of the CM.<sup>472</sup> Northwestern used the CM.<sup>473</sup>

323. Northwestern was involved in the activities of the 568 Group. President Schapiro was the Vice Chair of the 568 Group from 2009 until the Group’s dissolution in 2022.<sup>474</sup> Other Northwestern officials also participated in the 568 Group. For example, Phil Asbury, Brian Drabik, and Angela Yang, all attended various 568 Group meetings.<sup>475</sup>

324. President Schapiro testified that he kept a stack of COFHE colorbooks on his desk.<sup>476</sup> Northwestern annually produced a set of “University Benchmarks” where it compared itself to its peers and relied largely on COFHE data.<sup>477</sup> These reports examined, *inter alia*, the percentage of

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468. NULIT-0000054483 at -492.

469. NULIT-0000053966 at -975.

470. NULIT-0000112607 at -609.

471. *See, e.g.*, NULIT-0000135011 at -013-014; NULIT-0000167827 at -829-830.

472. *See* NULIT-55424 at -424 (“[I]n order to stay compliant we would need to follow *all* of the [Consensus Methodology] guidelines.”).

473. *See* NULIT-0000110563 (“Carolyn Lindley and I agree that NU should continue to follow the consensus methodology in awarding financial aid that this group has devised and that NU should continue to be members of it.”); NULIT-0000112607 at -609 (“[A] different formula (Consensus Methodology) was used to award institutional resources.”).

474. COFHE-02-10409 at -413.

475. *See, e.g.*, COFHE-02-00011305 at -308; AMHE-00000621 at -623; COFHE-02-00002745 at -747; NULIT-0000132209 at -212.

476. Schapiro 63:25-64:5.

477. *See, e.g.*, NULIT-0000149608 (“Much of the comparative data herein is gathered by the Consortium on Financing in Higher Education (COFHE).”).

students receiving grant aid at peer schools over time and the sources of financial aid tracked over time.<sup>478</sup>

## 8. Notre Dame

325. Notre Dame's signed the 568 Group's MOUs.<sup>479</sup> Notre Dame employees recognized that the Consensus Agreement established "certain agreed upon parameters" for awarding financial aid.<sup>480</sup>

118. After the 568 exemption was renewed in 2015, Notre Dame's Director of Financial Aid informed others at Notre Dame that it was "great news for Notre Dame and how [it] compete[s] and [tries] to 'level' the playing field at least in the calculation of need."<sup>481</sup> Notre Dame generally applied the Core Principles.<sup>482</sup> Notre Dame's IM was based on the Base IM, and it aligned with most components of the CM.<sup>483</sup>

326. Notre Dame participated in the formation and activities of the 568 Group, such as by having its directors of financial aid served on the 568 Group's Technical Committee—which was responsible for creating the Consensus Methodology Guidelines—since the 568 Group's inception.<sup>484</sup>

327. The COFHE colorbooks would be "shared with" Notre Dame "by an ally institution" so that Notre Dame could "use it internally for benchmarking, planning, and decision-making."<sup>485</sup> After a meeting to review certain data inconsistencies, Notre Dame determined that COFHE should

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478. *Id.* at -657.

479. *See, e.g.*, ND\_0011008 (2020); ND\_0135053 (2016); *see also* Nucciarone Rule 30(b)(6) Dep. Ex. 20 (Jan. 2015 Results of Consensus Methodology Questionnaire).

480. ND\_0006830.

481. ND\_0065243.

482. Nucciarone Rule 30(b)(6) Dep. 71:20-72:19.

483. *Id.* 304:19-22, 230:15-20, 316:2-4, 364:23-365:11.

484. *Id.* 230:15-20, 316:2-4.

485. ND\_0035788; Bishop 116:13-117:20.

be used as the peer group and data source for the Academic Report published by its Office of Institutional Research for the Board of trustees.<sup>486</sup> It reached this conclusion, among other reasons, because “COFHE data and comparisons are used in other materials prepared for the Trustees,” it possessed “historical COFHE benchmarking data,” and the “COFHE comparison provides a truer reflection of the University’s undergraduate financial aid policies.”<sup>487</sup>

**A. Evidence As to 568 Group Members that Left or Joined Late**

**1. Brown**

328. Brown recognized in 2002 with respect to the “568 Common Standards”: “The intent of this group is to establish a set of need analysis standards that will more closely align the amount we ask families to pay.”<sup>488</sup> Brown signed the 568 Group’s MOU, though the 568 Group MOU that Brown signed in 2006 contained a disclaimer that Brown’s participation did not commit or bind Brown.<sup>489</sup>

329. Notwithstanding that disclaimer, as of 2007, by Brown’s own description, the school was using the “IM/568 methodology.”<sup>490</sup> In this regard, Brown considered the Base IM to be superior to the FM for calculating EFC. “[I]n using IM, Brown University . . . includes several income and asset factors not considered in FM. We believe in most instances [IM] . . . more accurately determines a family’s ability to pay for education.”<sup>491</sup>

330. In 2008, Brown observed: “Columbia also uses the 568 Principles for Needs Analysis as do we, so our calculated parent contributions should be similar.”<sup>492</sup> In 2009, the 568 Group

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486. ND\_0168159.

487. *Id.*

488. BROWN\_0000064244 at -245.

489. BROWN\_0000078665.

490. BROWN\_0000002706.

491. BROWN\_0000050379 at -384.

492. BROWN\_0000009178.

Technical Committee explained that “the current 568 methodology is based on common agreements designed to reduce the variance in PCs for students with similar circumstances.”<sup>493</sup> Brown’s Director of Financial Aid was a member of the Technical Committee at that time, and he testified that “when we talk about the principles of how to determine a family’s ability to pay, general consensus about what components should be used, . . . I think, in general, people agreed. I don’t know anyone who outwardly didn’t agree.”<sup>494</sup>

331. Brown was an active member of the 568 Group and attended meetings.<sup>495</sup> Brown’s Director of Financial Aid, as noted, was a member of the Technical Committee<sup>496</sup> and was nominated to the Chair of that Committee before Brown withdrew from the 568 Group in 2012.<sup>497</sup> Brown used 568 Group presentations in its own internal meetings.<sup>498</sup>

332. On May 23, 2012, citing its “need sensitive analysis” for transfer students, Brown resigned from the 568 Group.<sup>499</sup> In doing so, Brown further stated: “Brown University supports the mission and values of the 568 Presidents’ Group and has appreciated our participation over the years in what we believe are important conversations dealing with issues relating to determining a family’s ability to pay for college costs and wish[es] . . . the Group continued success.”<sup>500</sup>

333. Brown used COFHE colorbook data to “[m]ake adjustments on self-help levels based on comparisons,” to “compare cost of attendance”<sup>501</sup>, as well as to research loan policies of other COFHE members.<sup>502</sup>

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493. BROWN\_0000015615 at -616.

494. Tilton 79:23-80:5.

495. Tilton 32:3-7; 34:16-35:7; BROWN\_0000016567 at -569.

496. BROWN\_0000018631.

497. BROWN\_0000094473 at -475.

498. *See, e.g.*, BROWN\_0000018554.

499. BROWN\_0000000439.

500. *Id.*

501. BROWN\_0000254353; BROWN\_0000254354.

502. BROWN\_0000057827.

## 2. Caltech

334. Caltech formally joined the 568 Group in 2019, but its involvement through attending 568 Group meetings may have begun as early as 2010.<sup>503</sup> Caltech regularly participated in the meetings and activities of the 568 Group, with documents reflecting that it formally joined the Group in part because that would allow Caltech to send even more staff to Group meetings.<sup>504</sup> And once it joined, Caltech remained a member of the 568 Group until it officially disbanded.<sup>505</sup>

335. Caltech described the 568 Group as a forum through which its peer schools discussed the push and pull of generosity and equitability in determining financial aid.<sup>506</sup> Caltech's Financial Aid Director Don Crewell recommended joining the 568 Group because it was considered "the best venue for discussing IM/CM needs analysis."<sup>507</sup> Before Caltech became a formal member, it queried the 568 Group about members' approach to home equity.<sup>508</sup>

336. In formally joining the 568 Group, Caltech signed the 568 Group MOU.<sup>509</sup> Caltech consistently applied the Core Principles and several CM components.<sup>510</sup> As a member of the 568 Group, Caltech's view was that the "consensus methodology was trying to be a best use case of using IM in trying to balance affordability while still remaining equitable."<sup>511</sup>

337. Caltech officials also used COFHE colorbook data regarding tuition and institutional financial aid to examine the practices of their peer schools.<sup>512</sup> Caltech also ended awards of merit

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503. Chang Rule 30(b)(6) Dep. 28:24-29:4, 34:14-22.

504. *Id.* 29:24-30:3.

505. *Id.* 31:17-19.

506. *Id.* 75:19-22.

507. Whitney 151:9-11; CALTECH000003709.

508. COFHE-02-00006617-6618.

509. CALTECH000000214.

510. Chang 227:9-234:11, 289:24-300:16.

511. Chang Rule 30(b)(6) Dep. 69:10-13.

512. Chang 124:3-24.

aid around 2008 and did not “regard any competitors of Caltech as offering merit aid.”<sup>513</sup> Caltech would also not match financial aid awards of its competitors.<sup>514</sup>

### 3. Chicago

338. Chicago described the 568 Group as having been “formed by largely COFHE institutions after the collusion investigation as a way for aid offices to try to keep all of their policies in line with each others.”<sup>515</sup> In May 2001, Vice President and Dean of College Enrollment Michael Behnke wrote in an email to President Don Randel recommending that Chicago join the 568 Group: “Joining will give us a place at the table in future discussions, particularly discussions of need analysis.”<sup>516</sup> When Michael Behnke made this recommendation, he had reviewed the Core Principles of the 568 Group and the proposed need analysis summary of eight key elements, including treatment of divorced and separated families and home equity.<sup>517</sup>

339. On August 23, 2006, Alicia Reyes, the Director of College Aid wrote to Michael Behnke, “In some ways [the CM] has really ‘cramped our style’ (e.g. divorce and separation) but it has provided a somewhat consistent approach across institutions.”<sup>518</sup> James Nondorf, Vice President for Dean of Admissions and College Aid, expressed a similar sentiment in 2013, writing in a meeting agenda, “568 Group – it is hampering our ability to compete.”<sup>519</sup> It then outlines the four ways in which the group did so: “1. Tax return policy, 2. Non-Custodial Parent Form, 3. Estimates and Timing of Awards, 4. Outside Scholarships.”<sup>520</sup>

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513. *Id.* 144:10-14, 283:3-10.

514. *Id.* 134:23-135:7.

515. UCHICAGO\_0000056595 at -696.

516. UCHICAGO\_0000300551.

517. UCHICAGO\_0000300538 at -542-544.

518. Reyes Decl. Ex. 1 (UCHICAGO\_0000183885).

519. Nondorf Decl. Ex. 1 (UCHICAGO\_0000052965 at -967).

520. *Id.*

340. In several memoranda, Alicia Reyes stated that the Chicago adjusted its IM to be consistent with the CM because “[a]s we are members of the 568 Group we are bound to adjust the base IM formula.”<sup>521</sup> The memoranda then go on to outline in a section on need analysis called “University of Chicago/Consensus Methodology (CM) Need Analysis.”<sup>522</sup> Chicago participated in the activities of the 568 Group by attending annual meetings and webinars.<sup>523</sup>

341. Chicago used COFHE colorbook data to compare its financial aid data with those of its peers. For instance, in 2009, Lisa Williams created a PowerPoint presentation comparing cost of attendance, fee increases, and self-help expectations across the COFHE universities.<sup>524</sup>

342. A 2013 Chicago internal meeting agenda includes as one item that: “568 Group – it is hampering our ability to compete.”<sup>525</sup> After the Chicago purportedly resigned from the 568 Group in 2014, Columbia subsequently observed: “On October 1, 2014, the Chicago launched a major financial aid initiative and outreach plan, dramatically improving their financial aid program and increasing outreach to low-income students.”<sup>526</sup> As reflected by an internal statement by COFHE’s Director of Public Issues, Defendants saw Chicago as going in the “direction” of “Harvard, Yale, and Princeton” and considered at least one 568 Group Member as “first among our types of schools to do that.”

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521. UCHICAGO\_0000000046 (2012); *see also* UCHICAGO\_0000031344 (2002) at -145; UCHICAGO\_0000187609 (2003) at -610; UCHICAGO\_0000187555 (2005) at -556; UCHICAGO\_0000031355 (2010); UCHICAGO\_0000000245 (2011); UCHICAGO\_0000147951 (2013).

522. *See* UCHICAGO\_0000000046 (2012) at -048-055; UCHICAGO\_0000031344 (2002) at -345-352; UCHICAGO\_0000187609 (2003) at -611-624; UCHICAGO\_0000187555 (2005) at -557-572; UCHICAGO\_0000031355 (2010) at -358-365; UCHICAGO\_0000000245 (2011) at -248-255; UCHICAGO\_0000147951 (2013) at -954-973.

523. *See, e.g.,* UCHICAGO\_0000183702 (June 4-5, 2002); UCHICAGO\_0000183755; UCHICAGO\_0000183758 (June 3, 2003); UCHICAGO\_0000183958, UCHICAGO\_0000183958 at -964 (Feb. 2-3, 2006); UCHICAGO\_0000103713 at -718 (June 1-2, 2015); UCHICAGO\_0000176995 at -999 (Nov. 23, 2015).

524. UCHICAGO\_0000184946; UCHICAGO\_0000184947-966; *see also* UCHICAGO\_0000003666 at -687 (“UChicago aid policies continue to trail many of our peers and overlap schools (*see* attached COFHE reports for individual examples).”).

525. UCHICAGO\_0000052966 at -967.

526. Columbia\_ Columbia\_00246836 at -837.

#### 4. Emory

343. Emory signed the MOU in December 2003.<sup>527</sup> Within a few years of joining, Emory's Director of Financial Aid described Emory as "one of 35 colleges and universities" that used this "reformulation of the institutional methodology" to "determine the ability of each student's family to support the annual costs of attendance."<sup>528</sup>

344. In internal documents Emory describes itself as implementing the CM,<sup>529</sup> including as reflected in its 2008 response letter to Congress regarding access to higher education.<sup>530</sup> Emory's then-Director of Financial Aid stated that the 568 Group limited its "options" regarding "changes in awarding" institutional aid compared to if Emory was "not held to the 568 Methodology."<sup>531</sup>

345. Emory was an active participant in the 568 Group while it was a member, with five different financial aid employees participating in 568 Group activities such as attending meetings.<sup>532</sup> Emory's President spoke at a meeting of the Technical Committee that Emory hosted and received updates on the 568 Group from financial aid employees.<sup>533</sup> Emory's Director of Financial Aid was also a member of the 568 Group Technical Committee.<sup>534</sup>

346. In Emory's view, the benefits of the 568 Group included its "attempt[] to create a need analysis which provides similar family contributions (not packages) to families attending common overlap institutions," the opportunity to "stay abreast of common practices of [its] peers," the "[o]ppportunity to establish best practices and common standards for student aid across a group of like institutions" with the "goal" of "reduc[ing] the variance that exists with family contributions

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527. Emory\_568Lit\_0022095.

528. Emory\_568Lit\_0011424.

529. Emory\_568Lit\_0033508; Emory\_568Lit\_0030219; Emory\_568Lit\_0035244.

530. Emory\_568Lit\_0007185 at -186.

531. Emory\_568Lit\_0033508 at -510.

532. Emory Resp. to 1st ROG No. 1.

533. Emory\_568Lit\_0033563; Emory\_568Lit\_0004279.

534. Emory\_568Lit\_0000131.



for students who apply to overlapping institutions,” the ability to provide “[d]irect input into enhancing the College Board’s institutional methodology/need analysis,” and “[a]ccess to aggregated data and longitudinal studies from the membership.”<sup>535</sup>

347. Emory signed the 568 Group MOUs.<sup>536</sup> Emory agreed with all the 568 Group’s Core Principles as listed in the Consensus Methodology Policy Guidelines Manual, and until resigning from the 568 Group it described itself as “faithful to its principles,” but ultimately “found them to limiting to allow [it] to manage [its] financial aid resources effectively for the future.”<sup>537</sup>

348. Although Emory was not a member of COFHE while it participated in the 568 Group, Emory later evaluated and sought to join COFHE because of the “data-sharing activities of COFHE” and thought membership would enable it to further be part of the “dialogue” about “best practices.”<sup>538</sup> Despite not being a member, Emory nonetheless sought out COFHE data from COFHE members, including data on “COFHE university endowments for financial aid plotted over time” that it could use as “benchmarks for Emory.”<sup>539</sup>

349. In resigning from the 568 Group, in 2012, Emory officials stated that the 568 Group “generates a restrictive environment for packaging financial aid at a time when college and universities need to be more flexible and responsive.”<sup>540</sup> Indeed, Emory had concluded in 2011: “We must drop our membership in the 568 group as it does not allow us to be as flexible as we should be with families.”<sup>541</sup>

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535. Emory\_568Lit\_0000543 at -545; *see also* Emory\_568Lit\_0017483 (Emory viewed it as a “plus” that it “would have [the] same information as 568 schools so awards should be consistent across all these schools”).

536. *See, e.g.*, Emory\_568Lit\_0022095.

537. Emory\_568Lit\_0006149.

538. Emory\_568Lit\_0007170 at -171.

539. Emory\_568Lit\_0003594.

540. Emory\_568Lit\_0006214.

541. Emory\_568Lit\_0023692 at -699.

## 5. Johns Hopkins

350. After a few years of participating in 568 Group meetings as a Guest Member, Johns Hopkins signed the MOU and became formal members around October of 2021.<sup>542</sup> Johns Hopkins became a formal member of the 568 Group in order to “become steeped” on “administering need-based aid” as well as to “help shape and inform some of the discussions and work” the 568 Group engages in.<sup>543</sup> In addition, Johns Hopkins had only recently transitioned from an FM-based approach to assessing need and thus started attending 568 Group meetings to “learn best practices” about how to “employ” it at Johns Hopkins.<sup>544</sup>

351. Johns Hopkins sent financial aid personnel to attend 568 Group meetings with the instruction to learn “more” about the CM and “how colleges use that at the respective schools.”<sup>545</sup> And a former Johns Hopkins financial aid employee has testified that they learned about financial aid practices at those meeting.<sup>546</sup> While participating in 568 Group meetings as a Guest Member and in the lead up to formally joining the 568 Group, Johns Hopkins “moved over time” to implement more of the CM.<sup>547</sup> It appears that these included the CM elements noncustodial parents and parent businesses.<sup>548</sup> And on other elements, such as assessment of rental income, Johns Hopkins had already been following CM practices.<sup>549</sup>

352. Johns Hopkins Associate Vice Provost Financial Aid & Executive Director of Student Financial Services regularly reviewed the COFHE color books and financial aid and

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542. JHULIT\_0000046845.

543. McDermott 95:24-96:18.

544. Phillips 190:13-192:7.

545. Wyatt 67:6-16.

546. *Id.* 103:3-105:10.

547. *Id.* 192:2-14.

548. *Id.* 51:18-52:2, 192:2-14.

549. *Id.* 193:16-195:20.

admissions data contained in them to compare Johns Hopkins to its peers.<sup>550</sup> This includes comparing metrics such as average grants, percent on aid, and net prices.<sup>551</sup> Johns Hopkins further consulted colorbooks when deciding whether to adopt the IM before joining the 568 Group.<sup>552</sup> Beyond its use of the colorbooks, Johns Hopkins was an active COFHE member at meetings, including by having employees presenting at meetings and planning retreats.<sup>553</sup>

## **B. Penn**

353. Penn's Director of Financial Aid has stated that one of principal reasons for the 568 Group was the "[c]onsistent spending of institutional funding based on common usage of institutional methodology analysis[.]"<sup>554</sup> Penn's Director of Financial Aid has also testified that Penn followed and agreed with the Core Principles and with the CM.<sup>555</sup> Penn signed the 568 Group MOUs.<sup>556</sup>

354. In preparing a synopsis of the 568 Group for Penn's president, Penn's Director of Financial Aid explained that while some schools had left the group because "they no longer wish[ed] to be limited by the restrictions of the needs analysis consensus document which requires us to apply certain needs analysis assessment constantly amongst all of our schools. (an example of this would be the percentage of the home equity that is used toward the contribution)[.]"<sup>557</sup>

355. As Penn's Director of Financial Aid noted in his comments on the GAO report, while Penn "had already adopted, on [its] own, many or most of the 568 policies, prior to the 568 agreement," the "agreement to use the CA" was nonetheless "critical for the long-range future of

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550. McDermott 98:9-23.

551. Phillips 247:1-248:7.

552. *Id.* 195:3-10.

553. McDermott 336:21-339:22.

554. PENN568-LIT-00133526.

555. *See, e.g.*, Varas 189:9-193:12.

556. *See, e.g.*, PENN568-LIT-00123812.

557. PENN568-LIT-00133526.

need-based aid.”<sup>558</sup> Columbia’s evaluation of Penn’s FA program in December 2007 noted that they were on a “level playing field” and that Penn applied the Consensus Approach.<sup>559</sup>

140. As Penn’s Financial Aid Policy & Procedure manual explained, “Penn’s approach to need analysis largely reflects the College Board’s Institutional Methodology (IM) and incorporates guidance from the 568 President’s Group.”<sup>560</sup> Penn’s 2018 Complete Policy Procedure Manual stated: “Penn uses a variation of the College Board’s Institutional Methodology (IM) to award institutional grant funds. Penn further adheres to the Consensus Methodology, a set of guidelines based on IM issued by the 568 President’s Group of need-blind schools.”<sup>561</sup>

356. Penn’s former Director of Financial Aid was a member of the 568 Group’s Technical Committee at its inception.<sup>562</sup> In 2019, even when it was considering formally withdrawing from the group, Penn still planned to “attend the meetings and participate in the thought exchange.”<sup>563</sup>

357. Penn used COFHE colorbook data for a variety of purposes, including analyzing its “top competitors” for admissions.<sup>564</sup>

### **C. Rice**

358. Internal Rice documents state that the 568 Group schools “tended to approach certain of the components of the base IM in the same way,” and that there was “not great variance” in how 568 Group schools defined income.<sup>565</sup>

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558. PENN568-LIT-00028999.

559. Columbia\_00015137.

560. PENN568-LIT-00080968.

561. PENN568-LIT-00017761 at -799; PENN568-LIT-00016120 (“Decisions were made to keep Penn aligned with the 568 Presidents’ Group Consensus Methodology.”).

562. Varas Rule 30(b)(6) 32:16-23.

563. PENN568-LIT-00137280.

564. PENN568-LIT-00020729.

565. Walker 222:1-223:2.

143. Rice regularly attended 568 meetings. Rice's Director of Financial Aid not only attended meetings, but also served on the Technical Committee and helped develop the meeting agendas.<sup>566</sup> In 2021, suggesting internally that Rice support renewal of the 568 exemption, she described the 568 Group as "extremely valuable to the FA offices."<sup>567</sup> Documents reflect that Rice employees believed Rice "benefit[ted] from the use of Institutional Methodology by identifying more assets and funds that families can use to pay for a Rice Education."<sup>568</sup>

359. According to witness testimony, Rice adhered to all of the Core Principles, as listed in the Consensus Methodology Policy Guidelines Manual.<sup>569</sup> Rice implemented at least some of the components of that Manual, including as to home equity.<sup>570</sup> In 2008, Rice's Vice President for Finance referred to Rice's "agreement with the 568 Group in using home equity."<sup>571</sup> Rice's Director of Financial Aid acknowledged that her staff discussed the Consensus Approach to home equity every year.<sup>572</sup> Rice signed the 568 Group's MOUs.<sup>573</sup>

#### **D. Vanderbilt**

360. Vanderbilt's description of its participation in the 568 Group as of 2003 was as follows: "We are a member of the 568 Group and the CSS Profile allows the flexibility to award aid consistent with the Consensus Approach to Need Analysis," and that Vanderbilt "subscribes, in principle, to the Consensus Approach promulgated by the 568 Group."<sup>574</sup>

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566. *Id.* at 26:19-27:1.

567. RICE\_LIT0000007552 at -553.

568. RICE\_LIT00000024667 at -670.

569. Walker 173:13-178:8.

570. Walker 36:25-37:24.

571. RICE\_LIT0000002016.

572. Walker 74:18-75:5.

573. RICE\_LIT\_000008049.

574. VANDERBILT-00200229.

361. Vanderbilt explained in the summer of 2006 that the “IM formula components that we use is usually referred to as Consensus Methodology (based largely on the work of the 568 Group.”<sup>575</sup> Vanderbilt’s further assessment in the summer of 2006 was that it had been a participant in the 568 Group for “a number of years” and that it was among the schools using “some or all” of the CM components in awarding Institutional Aid.<sup>576</sup>

362. When Vanderbilt assessed the benefits of the 568 exemption in 2014, it concluded that it allowed for “discussion” that “allows for a common approach, so a family’s expected family contribution does not vary to any great extent from school to school.”<sup>577</sup> According to the Dean of Financial Aid and Admissions: “Expiration of the exemption “would cause instability in the marketplace with the potential of . . . financial aid packages varying widely amongst institutions. We could be forced into a bidding war for students . . . This could cause an increase in need-based aid expenditures.”<sup>578</sup> Vanderbilt acknowledges that there are components of the CA that have helped reduce variance in needs-analysis results and that the CM helped the school better understand demonstrated need.<sup>579</sup>

363. In describing the significance of its decision to sign the 568 Group MOU in 2016, Vanderbilt explained the MOU as follows: “This document outlines that Vanderbilt agrees to participate in the work of the 568 Presidents’ group and adheres by a set of numerated guidelines. I have reviewed these guidelines and were are in full compliance.”<sup>580</sup> In analyzing the 568 Group in 2017, Vanderbilt explained that “the 568 Group is a group of qualifying colleges and universities to

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575. VANDERBILT-00204227.

576. VANDERBILT-00163991.

577. VANDERBILT-00389088.

578. *Id.*

579. Christiansen 70:2-18, 72:13-23.

580. VANDERBILT-00041936.

establish common approaches for awarding . . . institutional financial aid. . . participation in the 568 Group allows financial aid officials to work together to develop common practices.”<sup>581</sup>

364. Vanderbilt agreed with all of the Core Principles as listed in the Consensus Methodology Policy Guidelines Manual.<sup>582</sup> Vanderbilt’s Director of Student Financial Aid and Scholarships does not recall anyone at the school ever objecting to any of the Core Principles.<sup>583</sup> When Vanderbilt received the updated Consensus Methodology Policy Guidelines Manual in 2015, for example, it stated that “Vanderbilt approves.”<sup>584</sup>

365. Vanderbilt regularly attended the 568 Group meetings. Vanderbilt’s Director of Student Financial Aid and Scholarships testified, for example, that “it would be unusual if we didn’t have someone from Vanderbilt there at each meeting.”<sup>585</sup> In the summer of 2009, Vanderbilt’s then-Director of Financial Aid explained with respect to the 568 Group the importance of Vanderbilt being “at the table” to be “involved and informed about discussions that often lead to need analysis decisions that these institutions (our ‘sister institutions’ and/or competitors) might use in determining financial need” and then awarding aid.<sup>586</sup>

366. In the spring of 2014, Vanderbilt’s then-Director of Financial Aid explained to the Dean of Admissions and Financial Aid the importance of Vanderbilt attending the 568 Group Needs Analysis Council meetings to keep up with the “IM” discussions and approaches being considered and/or implemented by “like institutions,” including peers, overlap schools and schools sophisticated in “IM” implementation.<sup>587</sup>

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581. VANDERBILT-00047538.

582. Christiansen 64:15-65:20, 66:20-69:2.

583. Tener 77:6-79:25.

584. VANDERBILT-00000811.

585. Tener 112:1-2.

586. VANDERBILT-00169945.

587. VANDERBILT-00182766.

367. Vanderbilt used and discussed COFHE colorbook data. The school's Office of Institutional Research, for example, would share internally the school's Bluebook financial aid data showing the percentage of Pell Grant recipients at peer schools, other competitors' financial aid data, matriculation rates for financial aid recipients, and breakdowns showing the percentage of income low-income need families.<sup>588</sup>

**E. Yale**

368. Yale helped to draft this April 2021 description of the longstanding "Value of 568 Membership": "Through collaboration to reach common approaches to a rigorous need analysis, the 568 Group is focused on consistent treatment of families in similar circumstances across member institutions, diminishing or eliminating divergent results, and enabling colleges to award need-based aid to the greatest number of eligible applicants."<sup>589</sup>

369. In connection with the 568 Group, Yale recognized that the FM is "not a good measure," is "not a good indicator of what a family can actually afford to pay. . . . Yale wants to have an indication of a family's financial strength so that we – so that we can support students and families that need the support and we know – we have a better idea of what type of support that is, where they're coming from. And those families -- going back to the principles of need analysis, those families that can afford to pay are paying at that level."<sup>590</sup>

370. Yale described the CA as "an agreed-upon methodology that, like the financial aid professionals in the group would say, this is something that we espouse to. This is something that is

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588. VANDERBILT-00012762; VANDERBILT-00346829 at -832, -840-41.

589. YALE\_LIT\_0000013965; Wallace-Juedes 67:15-70:12.

590. Wallace-Juedes 150:11-151:23.



part of need-based financial aid and are ways which your institution might consider.”<sup>591</sup> Yale did not merely “consider” applying the CA; instead, Yale’s signed the 568 Group’s MOUs.<sup>592</sup>

371. Yale generally applied the Core Principles in awarding Institutional Aid, and in fact applied only Need-Based Aid.<sup>593</sup> In awarding Institutional Aid, Yale thus started from the premise that “families and students and their ability to pay for college is the place we start, the foundation of need-based financial aid. Whether or not I would use the word 'primary responsibility,' I don't know. But to me, it's a partnership between the institution and the family.”<sup>594</sup>

372. During both of its formal tenures in the 568 Group (from 2003-04 through 2007-08, and 2017-18 through 2021-22), Yale used the CM (or a substantially similar version of it). Yale appeared to hew more closely to the CM in its initial tenure, consistent with its recognition prior to rejoining the 568 Group, as noted above, that Harvard, Princeton, and Stanford were being more “aggressive” in their “needs analysis.”

373. Before purportedly resigning, Yale regularly participated in the meetings and activities of the 568 Group. Yale attended the fall 2017 and fall 2018 meetings;<sup>595</sup> attended the Need Analysis Council meeting in May 2018;<sup>596</sup> and attended the spring and fall 2019 meetings.<sup>597</sup>

374. Yale officials used COFHE colorbook data regarding tuition and institutional financial aid to examine the practices of their peer schools. For instance, Scott Wallace-Juedes, Yale’s former Director of Undergraduate Financial Aid, testified that Yale used COFHE data “typically . . . to help inform decision-makers at the university and at the college around where we

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591. *Id.* at 60:17-61:6.

592. *See, e.g.*, YALE\_LIT\_0000133213 (August 2017), -214 (April 2020).

593. Storlazzi 77:17-80:9; Wallace-Juedes 105:2-106:22.

594. Wallace-Juedes 104:7-24.

595. *See, e.g.*, YALE\_LIT\_0000124675; YALE\_LIT\_0000050567.

596. YALE\_LIT\_0000124439.

597. YALE\_LIT\_0000123774; YALE\_LIT\_0000129098.

stood within that group in terms of maybe our net cost of attendance or our net cost, our net price, general borrowing, student loan borrowing, those sorts of data points.”<sup>598</sup> In one memorandum from Yale’s Financial Aid Working Group, Yale officials described distributing summaries of COFHE data for the Ivy League and Stanford regarding “[s]hare of aided students, distribution of aided students by family income, and % on Pell[, self-help and summer income contribution[, and c]ost of attendance over time.”<sup>599</sup> These types of data “could figure into [Yale’s] decision-making” on analysis of potential financial aid policies.<sup>600</sup>

375. In 2006, Yale’s Dean of Undergraduate admissions wrote a lengthy introspective “background paper on undergraduate admissions.”<sup>601</sup> The memorandum addresses the rising competitive environment at that time, remarking that Yale was taking “measures to keep pace” with peers.<sup>602</sup> The memorandum singled out competition with Harvard, Stanford, and Princeton. After remarking that those three schools and Yale were “far ahead of other highly selective colleges in the generosity of their financial aid programs,” the memorandum noted that Yale was still behind Princeton and Harvard.<sup>603</sup> The Dean attributed that to the fact that “Harvard and Princeton have declined to agree to the principles” of the 568 Group of which “Yale has been a member and leader.”<sup>604</sup> Harvard and Princeton thus may “change the way they determine family need in respects which give them an advantage of greater flexibility.”<sup>605</sup>

376. Yale announced its departure from the 568 Group in the spring of 2008 (effective for the incoming class enrolling in fall of 2008) on the rationale that the 568 Group constrained Yale’s

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598. Wallace-Juedes 198:22-199:7.

599. YALE\_LIT\_0000026870 at -872.

600. Storlazzi 176:8-12.

601. YALE\_LIT\_0000028760.

602. *Id.* at -776.

603. *Id.*

604. *Id.* at -777.

605. *Id.*

ability to compete for students by offering more generous aid, and thus lower Effective Institutional Prices. Yale's then-Director of Student Financial Services, Caesar Storlazzi, concluded: "By leaving the 568 Group, Yale is now free to give families more aid than they would have gotten under the consensus methodology."<sup>606</sup>

377. After its announcement, Yale adopted an income threshold of \$60,000, under which there would be no parental contribution.<sup>607</sup>

378. After Yale adopted the \$60,000 income threshold, in October 2008, the head of the Technical Committee, Mr. Belvin, stated to 568 Group members that the automatic waiver of parental contributions "should not . . . be a standard applied to groups of students" under the CM.<sup>608</sup>

#### **F. Evidence As to Elite Private Universities that did not Join the 568 Group**

379. Harvard attended 568 Group meetings from time to time when invited, but did not consider itself a "member of that group."<sup>609</sup> As explained by its former Financial Aid Director, Harvard understood a "goal" of the group to be to come up with a "consensus methodology" involved having "schools sign on the same need analysis methodology."<sup>610</sup> Harvard then decided not to join the 568 Group because it "would not be able to award the financial aid we had awarded to families. We'd have to reduce it."<sup>611</sup> Defendants have commented internally that Harvard had

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606. Caitlin Roman, University Leaves Financial Aid Group, YALE DAILY NEWS (Sept. 26, 2008), <https://yaledailynews.com/blog/2008/09/26/university-leaves-financial-aid-group/>

607. *Yale Cuts Costs for Families and Students*, YALENEWS (Jan. 14, 2008), <https://news.yale.edu/2008/01/14/yale-cuts-costs-families-and-students>.

608. GTWNU\_0000009794. The 568 Group later distributed a common non-custodial waiver form that "everyone agreed" to use as part of the agreed upon approach on how to handle non-custodial parents. DUKE568\_0132966.

609. Donahue 55:5-11.

610. *Id.* 55:19-56:6.

611. *Id.* 56:4-15.

declined to participate in the 568 Group at least in part because it was “significantly more generous” with financial aid.<sup>612</sup>

380. Princeton did not join the 568 Group and its Director of Undergraduate Financial Aid through approximately 2006 could not recall if he even ever attended a 568 Group meeting.<sup>613</sup> But he was aware of the 568 Presidents Working Group and believed their “task was to develop whatever the allowable was, measurement to pay under the guidelines of the 568 clause.”<sup>614</sup> According to him, Princeton did not join because Princeton wanted “financial aid to be under our control.”<sup>615</sup> He explained that he thought by joining the 568 Group, Princeton “would have to comply with whatever their guidelines [and procedures] were.”<sup>616</sup> Defendants have commented internally that Princeton had declined to participate in the 568 Group at least in part because it was more generous with financial aid.<sup>617</sup>

381. Stanford also did not join the 568 Group. Stanford was a signatory to the July 6, 2001 press release announcing the group because its then-president was “very interested in ensuring access and affordability and a strong believer in transparency in the financial aid process.”<sup>618</sup> But, as explained by its Associate Dean and Director of Financial Aid, ultimately Stanford did not “want[] to be involved in the detailed conversations about consensus approach to the methodology because we were doing our own thing.”<sup>619</sup> In particular, she stated that after an “evaluation” that there were

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612. *See* Columbia\_00056363 at -364. In 2011, Columbia’s Executive Director of Financial Aid wrote that Columbia applied the CM as “agreed upon by the 568 Group” but Columbia’s biggest competitors were Harvard, Yale, and Princeton who she noted are “no longer part of the 568 Group” and are “significantly more generous.” In contrast, she noted, “most of [Columbia’s] peers are part of 568 and follow” the CM. *Id.*; *see also* MITLIT-000074274; DUKE568\_0123265.

613. Betterton 170:9-16.

614. *Id.* 6:3-9.

615. *Id.* 7:20-18:11

616. *Id.* 21:22-22:4.

617. *See* Columbia\_00056363 at -364; *see also* MITLIT-000074274; DUKE568\_0123265.

618. Cooper 32:12-21.

619. *Id.* 8:18-19:12.

“things that the consensus methodology was proposing that we were headed in a direction that was a little more generous than what they were proposing.”<sup>620</sup> Defendants have commented internally that Stanford had declined to participate in the 568 Group at least in part because it was “significantly more generous” with financial aid.<sup>621</sup>

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620. *Id.* 19:16-20:11.

621. MITLIT-000074274.

**APPENDIX 8: 568 PRESIDENTS GROUP MEETINGS AND CALLS OF THE NEEDS ANALYSIS COUNCIL  
AND TECHNICAL COMMITTEES 2000-2022**

<b>Meeting Date</b>	<b>Supporting Record Cite</b>
03/02/2000	CORNELL_LIT0000399377
10/31/2000*	COFHE-02-00002780
06/04/2002	COFHE-02-00002498
06/03/2003	UCHICAGO_0000183757
06/16/2003	GTWNU_0000172551
10/31/2003	GTWNU_0000032311
06/02/2004	Columbia_00013792
02/02/2005*	NULIT-0000101010
06/15/2005*	UCHICAGO_0000183818
02/02/2006*	COFHE-02-00003184
06/07/2006	COFHE-02-00003195
01/29/2007*	GTWNU_0000009048
06/11/2007*	GTWNU_0000009171
01/28/2008*	COFHE-02-00014327
06/17/2008	AMHE-00000329
01/28/2009*	COFHE-02-00015333
06/10/2009	COFHE-02-00015824
09/22/2009	GTWNU_0000027488
01/26/2010*	BROWN_0000016455
06/17/2010*	COFHE-02-00011635
01/01/2011	BROWN_0000000236
01/26/2011*	GTWNU_0000010186
06/14/2011	Columbia_00056393
06/16/2011*	COFHE-02-00012997
08/03/2011	DUKE568_0138967
06/21/2012	BROWN_0000000288
01/25/2012*	COFHE-02-00008630
08/07/2012	DUKE568_0096585
09/07/2012	AMHE-00001287
06/21/2012*	Columbia_00258494
10/16/2012	GTWNU_0000010320
10/31/2012	GTWNU_0000026078
11/12/2012	GTWNU_0000247879
11/26/2012	MIDDLEBURY00896
01/14/2013*	COFHE-02-00006512
05/23/2013	BROWN_0000019991
05/30/2013	BROWN_0000020054
06/24/2013	NULIT-0000056431

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Meeting Date	Supporting Record Cite
07/08/2013	GTWNU_0000029169
08/09/2013	AMHE-00002183
10/01/2013	VANDERBILT-00018748
10/02/2013	COFHE-02-00013648
02/19/2014	DUKE568_0153494
04/15/2014	MIDDLEBURY02182
04/30/2014	DUKE568_0102164
06/11/2014	GTWNU_0000024527
06/17/2014*	AMHE-00003604
08/15/2014	AMHE-00004078
09/08/2014	DUKE568_0102697
09/29/2014	GTWNU_0000141992
10/15/2014	NULIT-0000057651
10/16/2014*	AMHE-00004895
11/04/2014	AMHE-00005243
11/12/2014	DUKE568_0139827
01/16/2015	Columbia_00059231
01/28/2015*	ND_0138837
02/15/2015	DUKE568_0139643
04/09/2015	MIDDLEBURY05936
05/14/2015	DUKE568_0100995
05/18/2015	Columbia_00187843
06/03/2015*	COFHE-02-00016692
09/24/2015	MIDDLEBURY14564
11/19/2015	AMHE-00008200
12/09/2015	GTWNU_0000008156
01/26/2016*	COFHE-02-00012920
03/22/2016	MIDDLEBURY06891
06/13/2016*	NULIT-0000170934
10/13/2016	VANDERBILT-00000921
10/21/2016	MIDDLEBURY09247
05/30/2017*	MIDDLEBURY10039
06/05/2017	DARTMOUTH_0000182682
08/30/2017	MIDDLEBURY10266
10/11/2017*	ND_0007991
01/11/2018	GTWNU_0000011919
04/24/2018	MIDDLEBURY10931
05/21/2018*	PENN568-LIT-00066297
10/10/2018*	CORNELL_LIT0000106482
04/16/2019	GTWNU_0000000231
04/22/2019	JHULIT_0000056362
05/14/2019	GTWNU_0000000247

Meeting Date	Supporting Record Cite
06/04/2019*	CALTECH000000309
09/27/2019	MIDDLEBURY14617
10/23/2019*	AMHE-00014596
01/21/2020	AMHE-00014861
03/04/2020	GTWNU_0000014442
04/09/2020	AMHE-00014885
04/13/2020	AMHE-00014908
04/20/2020	JHULIT_0000100782
05/14/2020	GTWNU_0000001102
06/03/2020	YALE_LIT_0000014895
10/08/2020	GTWNU_0000015176
10/21/2020	Columbia_00258494
11/05/2020	GTWNU_0000355969
12/17/2020	Columbia_00258494
06/01/2021	MIDDLEBURY13745
06/04/2021	CORNELL_LIT0000108863
06/14/2021	ND_0000763
09/30/2021	DARTMOUTH_0000005908
11/09/2021	ND_0003798
12/13/2021	UCHICAGO_0000015373
12/16/2021	MIDDLEBURY14519
01/24/2022	MIDDLEBURY14524
04/19/2022	DUKE568_0123793

This table is not exhaustive, but instead represents the scheduled group meetings and calls that have been identified by Plaintiffs at this time. It does not include any informal communications taking place between Defendants outside of scheduled group meetings, events, and calls. There is record evidence, for example, that the 568 Group Technical Committee had anywhere from 12-15 calls from year to year.<sup>622</sup>

\* For those entries denoted with an asterisk, record evidence indicates that an in-person conference, often spanning multiple days, took place. *See, e.g.*, COFHE-02-00002780 (Cornell Club of New York, New York); COFHE-02-00015824 (The Colony Hotel, Maine); PENN568-LIT-00066297 (Lansdowne Resort and Spa, Virginia).

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622. Downs-Burns 107:21-108:7.



